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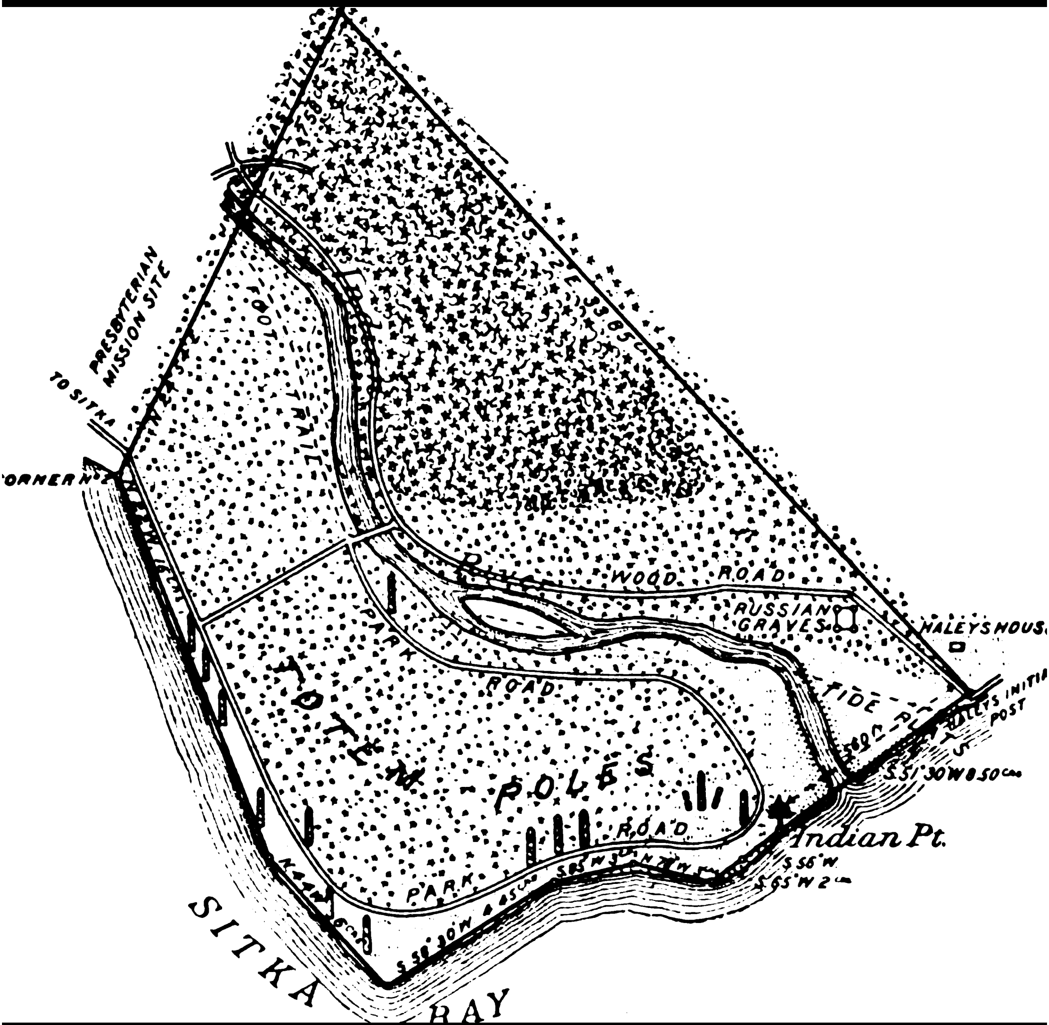

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REPORTS OF THE

# DEPARTMENT OF THE INTERIOR

FOR THE FISCAL YEAR ENDED JUNE 30

1911

## ADMINISTRATIVE REPORTS

IN 2 VOLUMES

## VOLUME I

SECRETARY OF THE INTERIOR
BUREAUS, EXCEPT OFFICE OF INDIAN AFFAIRS
ELEEMOSYNARY INSTITUTIONS
NATIONAL PARKS AND RESERVATIONS

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Administrative reports, in 2 volumes.
  Vol. I. Secretary of the Interior.
    Bureaus, except Office of Indian Affairs.
    Eleemosynary institutions.
    National parks and reservations.
  Vol. II. Indian Affairs.
    Territories.
Report of the Commissioner of Education, in 2 volumes.

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# REPORT OF THE SECRETARY OF THE INTERIOR.

# BUREAUS OF THE INTERIOR DEPARTMENT.

The Department of the Interior was established by the act of March 3, 1849 (9 Stat. L., 395).

## GENERAL LAND OFFICE.

Organized as a bureau of the Treasury Department under act of April 25, 1812 (2 Stat. L., 716).

First Commissioner, Edward Tiffin, of Ohio; appointed May 7, 1812.

Became a bureau of the Interior Department when that Department was organized under the act of March 3, 1849 (9 Stat. L., 395).

## INDIAN OFFICE.

Organized as a bureau of the War Department under act of July 9, 1832 (4 Stat. L., 564).

First Commissioner, Elbert Herring, of New York; appointed July 10, 1832.

Became a bureau of the Interior Department when that Department was organized.

## BUREAU OF PENSIONS.

Organized as a bureau of the War Department under act of March 2, 1833 (4 Stat. L., 622).

First Commissioner, James L. Edwards, of Virginia; appointed March 3, 1833.

Became a bureau of the Interior Department when that Department was organized.

## PATENT OFFICE.

Organized as a bureau of the State Department under act of March 4, 1836 (5 Stat. L., 117).

First Commissioner, Henry S. Ellsworth, of Connecticut; appointed July 4, 1836.

Became a bureau of the Interior Department when that Department was organized.

## BUREAU OF EDUCATION.

Organized under act of March 2, 1867 (14 Stat. L., 434).

Became a bureau of the Interior Department July 1, 1869, under act of July 20, 1868 (15 Stat. L., 106).

First Commissioner, Henry Barnard, of Connecticut; appointed March 14, 1867.

## GEOLOGICAL SURVEY.

Organized as a bureau of the Interior Department under act of March 3, 1879 (20 Stat. L., 394).

First Director, Clarence King, of New York; appointed April 14, 1879.

## RECLAMATION SERVICE.

Organized under act of June 17, 1902 (32 Stat. L., 388), under the Director of Geological Survey, Charles D. Walcott.

First Director, F. H. Newell, of Pennsylvania; appointed March 9, 1907.

## BUREAU OF MINES.

Organized as a part of the Interior Department under the act of May 16, 1910 (36 Stat. L., 369).

First Director, Joseph A. Holmes, of North Carolina; appointed September 3, 1910.

# REPORT OF THE SECRETARY OF THE INTERIOR.

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WASHINGTON, D. C., *December 1, 1911.*

SIR: I have the honor to submit, for your consideration, my first annual report as Secretary of the Interior, covering the year ended June 30, 1911. I was appointed to this office by you on March 7, 1911, and qualified on March 13, 1911, succeeding the Honorable Richard A. Ballinger. Less than one-third, therefore, of the year included in this report has been covered by my administration.

## GENERAL STATEMENT.

My predecessors have called attention to the mass and variety of important matters which are intrusted to the charge of the Department of the Interior, and which relate to—

The General Land Office,
The Office of Indian Affairs,
The Pension Office,
The Patent Office,
The Geological Survey,
The Bureau of Education,
The Bureau of Mines,
The Reclamation Service,
The Territories (exclusive of the insular possessions; but including Hawaii),
The national parks and monuments,
American antiquities,
Superintendent of Capitol Building and Grounds,
Government Hospital for the Insane,
Freedmen's Hospital,
Howard University,
Columbia Institution for the Deaf and Dumb.

The Secretary of the Interior is also charged with certain duties in connection with the District of Columbia, including the protection of the public streets, avenues, squares, and reservations in the city of Washington from improper appropriation or occupation; the issuance of deeds to certain lots in that city, and special duties imposed by particular acts of Congress.

My predecessor, Secretary Ballinger, called attention in his annual report for the year 1910 to the thoroughly inconsistent manner in which the work of the Government has been divided between the administrative departments of the Interior, of Agriculture, and of Commerce and Labor, with the inevitable result of duplication of governmental effort and the administrative ineffectiveness arising out of divided jurisdiction. A very substantial increase of efficiency and economy would undoubtedly result from a rearrangement of these executive departments so that work of a related character could be administered by one department, and so that the mass of work itself could be more evenly distributed among the departments. The grouping of related subjects in a single department would undoubtedly materially reduce the work of some, without greatly increasing that of others. The present situation is the quite natural outgrowth of the manner in which the Department of the Interior was first created and the inconsistent duties which were then imposed upon it. The principal bureaus which were at first placed under it were the General Land Office, the Office of Indian Affairs, the Patent Office, and the Pension Office, but as new matters were undertaken by the General Government which did not logically fall under any of the other departments they were naturally assigned to the Department of the Interior, which became a sort of administrative "catchall" and has so continued, although partially relieved by the establishment of the Department of Agriculture and the Department of Commerce and Labor.

It is difficult to understand why the Patent Office should not have been transferred to the latter department upon its creation, although the Patent Office is now so thoroughly organized and systematized and its work so definitely covered by statutory and administrative regulations that the matters which come up from it to the Secretary of the Interior do not add materially to his work. I am of the opinion, however, that if this bureau should be transferred to the Department of Commerce and Labor a relationship could be established between it and the head of that department which would increase its efficiency and usefulness. The local duties of the Secretary of the Interior relating to various matters in the District of Columbia should unquestionably be turned over to the Commissioners of the District. I do not feel, however, that my brief period of office qualifies me to recommend a comprehensive reorganization of the Department of the Interior. What I have said above is chiefly intended as preliminary to the statement that the real function of the Department of the Interior has been, broadly speaking, the administration and disposition of the lands and natural resources held directly or in trust by the Nation. I believe that the Department will more effectively and economically carry on this tremendously important function if it is given all of the distinctively administrative duties relating to it.

## PUBLIC-LAND LAWS.

The general theory under which the Government has proceeded and is now proceeding is that the public domain should be utilized for actual settlement and development rather than as a source of revenue for the General Government. In my judgment this theory is entirely correct. The essential thing is to see that the theory is, in fact, carried into effect and that under the guise of settlement we do not permit mere exploitation which in the last analysis retards and prevents both settlement and development. While settlement and development afford and should afford ample opportunity for the profit of the individual settler and of all those who contribute to legitimate development, it is the conviction that exploitation under the guise of development has not been effectively prevented which has led to the great public movement for the conservation of our national resources. This movement is not in any way opposed to prompt and wise development of the public domain, nor to its immediate settlement by those who really intend in good faith to occupy and improve it and not merely to acquire it so that it may be turned over to the actual settler after an unnecessary profit has been paid to the middleman and the promoter.

There is undoubtedly a legitimate field for the resident or nonresident promoter of enterprises upon which the effective settlement of certain portions of the public domain practically depends. There is a legitimate field for the expenditure of capital in the development of the land and its contents. Indeed, the bona fide settler is dependent in many instances upon the services of the promoter and the money of the capitalist. In so far as this need is properly supplied the promoter and capitalist should be protected, but there is no disguising the fact that both promoter and capitalist frequently seek and secure advantages to which they are not justly entitled. Often their efforts not only do not tend to develop, but actually retard and prevent development. Large areas of the public land, great quantities of timber and of mineral deposits, extensive water powers, are eagerly sought after, not for the purpose of immediate utilization and development, but so that they may be held to await the aftergrowth of the country, to be then transferred to those who will actually utilize them after an unearned increment has been paid to those who acquired the property from the Government under insufficient laws or lax administration.

It is this sort of exploitation which should be frankly and absolutely prevented and which, if prevented, would enable us to remove many of the restrictive provisions which now irritate and hamper the bona fide settler and industrial pioneer. The man on the ground should be the object of our solicitude, and we should protect him against those who would place upon his shoulders any unnecessary burden. I believe that to this end we can profitably modify certain of the existing laws relating to the public domain. Take, for instance, our agricultural lands. The object of the law with respect to these is to ensure actual settlement. This can be accomplished only by rigid insistence upon the requirement of actual residence upon the ground with only such exceptions as are required or justified by agricultural conditions which make town residence in close proximity to the tract cultivated appropriate. The system should be flexible enough to recognize the actual differences which in fact exist with respect to the different kinds of land and the different methods of cultivation. Land adapted to dry farming, land adapted to ordinary cultivation without irrigation, and land requiring irrigation each presents differences in method of cultivation and should admit of appropriate differences in the rules with regard to residence. The law should insist upon the cultivation of agricultural lands by the entryman, but should permit the application to such lands of rules and methods of treatment suited to their differing characteristics under the general administrative supervision of the Secretary of the Interior. In other words, the laws and the administrative regulations should be made to fit actual conditions as they exist, and they should be just as stringent in the prevention of nonresident exploitation as they are liberal in the encouragement of the bona fide settler.

Although substantially true of all homestead entries, this is especially true of irrigated lands under the Reclamation Service. The present law requires the man who desires to acquire a home on a Government reclamation project to reside upon the particular tract he enters for five years under the homestead law and to reclaim at least one-half of the irrigable area as well as to pay the full reclamation charge, which must be divided into not more than 10 annual installments. This law has been a perfectly natural outgrowth of the previous laws relating to the public domain, and it has worked marvelously well in spite of its disadvantages. It is now clear, however, that it contains certain serious disadvantages for which there is no longer any adequate excuse. What we desire is actual settlement. We should have no desire to impose any unnecessary hardships upon the actual settler. What has happened is that the law has failed to take into account the conditions under which the actual settler is required to work.

Irrigated lands, as a rule, are in their natural state but parts of the desert. They are usually covered with the growths which the desert produces. These must be cleared and the land graded and otherwise prepared for the application of water before any crops whatever can be raised. In many instances each tract must also be fenced, and where it is adapted for actual residence on the ground itself the home must be constructed, together with the necessary outbuildings and shelters for the agricultural implements and machinery essential to cultivation. All of this requires a considerable expenditure which is usually a heavy drain upon the resources of the settler. The land itself can seldom be made to produce any immediate revenue. If it is fruit land, the trees must be planted and reach a certain growth before they will bear fruit. Subsidiary crops can often be raised, but frequently not with profit until after one or two years' preliminary cultivation. It is often essential to plant the land in alfalfa or other leguminous crops before it is suitable for the raising of grain, sugar beets, or other crops for which it is ultimately intended. All of this means that where the settler has not accumulated a considerable capital and is without other means of livelihood, the requirement of actual residence upon the land during the first two years after entry is a serious hardship and a real obstacle to settlement. Many men who would make admirable settlers and citizens of the Western States are prevented from acquiring the homes and the substantial livelihood which would otherwise be opened to them. I see no reason whatever for insisting upon the requirement of actual residence at the outset in such cases.

On the other hand, it would be subversive of the public interest if the residential requirement were reduced without strict insistence upon actual and progressive cultivation and improvement of the ground. The law should fasten its attention upon the real situation. It should absolutely insist upon cultivation and it should permit the relaxation of the rule requiring residence during the first two years. Actual residence, however, should be rigidly required for a sufficient period to make certain that the entryman was a real settler with the intention of making his home upon the land. I believe a residential requirement of three years following the first two after entry would protect the public interest, ensure the carrying out of the essential purpose of the law, and at the same time facilitate and encourage settlement and development. It would permit many men who sincerely desire to acquire homes for themselves to enter tracts of land, put them under cultivation, and build homes without depriving themselves of the means of livelihood during the period when the ground would not support their families. Clerks, mechanics, and small farmers, as well as many others, would be enabled to invest their accumulated savings in their future homes and to continue in their present employment while they were preparing these homes for future occupation. The requirement of progressive cultivation and three years' residence would be an effective obstacle to the mere exploitation of the public domain.

The repayment of the reclamation charges also requires some modification of the existing law. The theory of the law is entirely correct. It is that the Government has set aside the available revenue from the sale of public lands and has added to it certain other funds, all of which are, in effect, loaned to the future settlers on the public domain. The Reclamation Service is constituted a trustee for the Government and for the settlers. It invests the public moneys in the construction of irrigation works and administers these works while the land is being settled and until the investment has been returned to the Government, to be invested in the irrigation of other lands and the development of other sections of the country. It is a useful agent of public benefaction, and nothing should be done to interfere with its beneficent operation. At the same time the settler should be enabled to carry the financial load with as little effort as possible. The law requires that it shall be repaid in annual installments not exceeding ten in number, and in view of recent legislation permitting the readjustment of these charges under appropriate conditions when circumstances require it, I believe the division into ten installments is wise, provided the settler is enabled to acquire patent earlier. However, these installments should not be, and fortunately the law does not require them to be, equal in amount. This permits the recognition of the actual conditions to which I have already referred and which call for an unequal division of the water charges so that the installments required during the early years of settlement shall not be so large as those of later years when the ground has been made more productive and better able to carry the load. The policy of readjusting these charges in the manner described is now being put into practical effect in the Reclamation Service wherever occasion requires.

There is, however, urgent need for the modification of the existing law so as to permit the settler to acquire the title of the property, subject to the lien of the Government for the unpaid installments of the water charge, at any time after the settler has complied with the residence and cultivation provisions already recommended and has paid a proper portion of the water charge. In other words, at any time after five years from the date of entry and within the life thereof, when the settler has actually lived upon the land continuously for three years and has put it under continuous and progressive cultivation and has paid a definite and substantial portion of the total water charge, he should be given the title to his property, subject to an effective lien for the payment of whatever part of the water charge remains unpaid. This will enable him to do what he is not now able to do—mortgage his property for the purpose of raising funds with which to continue its development, or to meet any unexpected obstacle to its profitable cultivation, or any unanticipated drain upon his financial resources.

In my judgment, the failure of the law to fit the facts in the respects already noted is largely responsible for a feeling sometimes existing on the part of the settlers on the Government irrigation projects that the human side of the problem has not been sufficiently appreciated by the Reclamation Service. Moreover, present methods of administration fail to differentiate properly between the engineering and administrative phases of the reclamation work. The Reclamation Service is naturally and necessarily concerned chiefly with engineering, planning, and construction, and I can not speak too highly of the character and qualifications of the general force which has this important work in charge. Its success has been demonstrated in many ways. It has worked out new and untried problems under adverse conditions. The most convincing proof of its success is the widespread and growing demand for new Government projects all over the West. Everywhere the demand is that the Government shall undertake new projects or make extensive additions to old ones. In many places the promoters and settlers upon private irrigation projects are eager to have the Government take them over. The general prosperity of the projects already undertaken is apparent. Only 338 homesteads open to entry now remain unentered on the 29 projects thus far undertaken. With the amendments to the law which I have suggested, I believe that all of these projects will become prosperous and their settlers generally happy and contented. Those will fail who do not possess the essentials necessary for success, but such failures can never be prevented.

We should aid the unfortunate in every proper way, but merely sentimental laxity with the shiftless and incompetent can only work disaster to the public at large and to the individual settlers whose industry and ability entitle them to the substantial reward which awaits those who really reclaim the desert. What is needed is wise administrative ability in those who are put in charge of the reclamation projects after they are opened for entry. The Reclamation Service has long recognized this and has endeavored to fill the positions of irrigation manager in the various projects by the appointment of men of administrative rather than distinctly engineering ability. Nevertheless, after the project is opened for entry it is necessary for a considerable period of time to have the irrigation works operated by engineers so that latent defects may be discovered and remedied and the works fitted to the conditions of actual operation. One of the most serious phases of our entire reclamation work is the disposition of the surplus waters which now frequently damage or even ruin portions of the irrigated district through seepage. The problem thus presented is one calling for the very highest engineering skill, and I have directed the Reclamation Service to devote its principal energies to remedying the unfortunate conditions thus created. I mention it here chiefly to illustrate the necessity for continued engineering supervision of an irrigation district even after it is opened for entry. At the same time I am convinced that the creation of a separate administrative division within the Reclamation Service to take charge of the administrative features as distinguished from the engineering work will promote better relations between the

Government and the settlers than have heretofore existed and will add in many ways to the efficiency of the Reclamation Service.

One thing which should be immediately done, however, is to turn over to the Reclamation Service the collection of the payments due the Government for the water charges so that they may be handled immediately upon the projects themselves and the funds be transferred to their proper depositories. The present law requires these charges to be collected by the local land offices, which are often not sufficiently near or in touch with the reclamation projects to make effective cooperation possible. The result is delay and duplication of work and frequent misunderstandings between the project superintendent and the nearest land officials. It is a division of work and of responsibility for which there is no adequate justification, and, as both the Commissioner of the General Land Office and the Director of the Reclamation Service recommend that these collections be transferred as above suggested, I earnestly urge appropriate action by Congress.

The considerations above mentioned with respect to residence and cultivation of land entries under irrigation projects would apply with little less force to homestead entries in general, provided all of our public lands were classified and then administered or disposed of in accordance with their real character under the classification. Too much emphasis has heretofore been put upon the maintenance of nominal residence for the full five years and too little upon the continuous and progressive cultivation of the land. No land should be opened to homestead entry except that which is really suitable for homes and then the homemaker should be aided in every proper way. Agricultural land should not be classified as timber land simply because it has on it some trees of secondary importance; but one of the abuses of the homestead law has been the entry under it of land chiefly valuable for its timber. The purpose has not been agricultural settlement but timber exploitation. This should no longer be permitted. Where timber land will be valuable for agricultural uses after the timber is cut, the Government should dispose of the timber as timber and should open the land to homestead entry only after the timber has been removed. Where timber land will not be adapted for future agricultural uses, but can be reforested, it should be retained by the Government for this purpose. The fact that purchases must now be made in the Appalachian Mountains by the National Forest Reservation Commission shows how unwise it is for the Government to dispose of such lands to private individuals.

Public lands can now be withdrawn from entry for purposes of classification, but after they are classified they can not be appropriately administered in accordance with the classification. If the statutes can be altered to secure proper administration under the classification principle, it would seem entirely safe and on the whole wise to relieve the homesteader of the requirement that he should live upon his homestead during the first two years after entry, provided during that period he shall cultivate a substantial and fixed proportion of his land and during the three following years shall increase this cultivation and maintain his actual residence upon the land. This system would aid the genuine homesteader and diminish the present abuses of the homestead law. It is sometimes urged that the homesteader should be permitted to secure his title after three years from the date of entry without other change in the present homestead law. This, however, would not properly meet the real situation as it would neither relieve the entryman of the obligation to reside on his land during the first two years after entry, nor would it ensure the actual progressive cultivation of a definite and substantial proportion of the ground. The commutation laws should be repealed. They have been largely utilized in obtaining valuable timber land under the guise of homestead entry.

Some practical and legal method should be found for definitely limiting the time within which such scrip as military bounties, soldiers' additional homesteads, etc., may be located and lands acquired thereunder. Few, if any, of the intended beneficiaries of this scrip now hold it or have received adequate consideration from those to whom they have sold. It adds greatly to the difficulties of administration and should be retired as soon as possible.

The timber and stone act should be immediately repealed, and also the act authorizing the cutting of timber on mineral lands. Those acts hold out a constant invitation to abuse and to mere exploitation of the kind I have described. The excuse for their continuance would be removed if the Secretary of the Interior were empowered to sell timber from the public lands outside of the national forests separate from the land on which the timber stands, and also to permit near-by settlers, prospectors, and miners to have use of small quantities of timber, either for a nominal charge or without any charge whatever under appropriate restrictions. It is the insistence upon keeping on the statute books such laws as the timber and stone act and those authorizing the cutting of timber on mineral lands which necessitates the adoption of restrictive legislation or administrative regulations that hamper real settlement and development. If we can frankly adopt and put into force laws which will absolutely prevent mere exploitation, we can far more safely enact liberal laws and regulations to encourage legitimate development.

The public range can not be properly administered under the existing law. It should be leased for grazing purposes under the broad administrative discretion of the Secretary of the Interior, so that the leases can be adapted to actual conditions and the legitimate interests of the sheep and cattle men. At present the range itself is being destroyed, and both sheep and cattle men are coming more and more to the conviction that their own interests will be better subserved by a leasing law. In fact, the enlarged application of the leasing principle to the public domain generally will, in my judgment, more effectively promote development and protect the public interest than the present system. Certainly coal, oil, gas, asphalt, nitrate, and phosphate lands can be more appropriately developed by leasehold than by the present system of classification and sale of the fee which prevails with respect to coal. Many of the Western States have recognized and are acting upon this principle. These applications of the leasing system are stated more in detail in connection with affairs in Alaska, but principles which are economically sound in Alaska should be economically sound elsewhere, due allowance being made for the different stages of development.

Our mining laws should be thoroughly revised, and particularly the use of the power of attorney should be abolished or greatly curtailed and safeguarded. At present there is no limitation whatever upon the number of claims which can be entered by a single man as attorney for others. I find among those who are personally and financially interested in mining development an increasing conviction that this should no longer be permitted. The advocacy of a definite limitation to the number of claims which can be entered by any one person as attorney for others is almost universal, and many believe that the entire power of attorney principle should be eliminated from the law. The surveying regulations relating to mining claims should be greatly simplified and should then be strictly enforced. I renew the recommendation made by my predecessor that notice of mining locations should be recorded in the local land offices. I also recommend earnestly the abolition of the law of the apex. It should not be allowed to gain any further foothold in the public domain and it should be abolished now before it has been extended any further in Alaska. It is unsound in principle and leads to constant and expensive litigation. The comprehensive application of the proposed repeal to the public lands outside of Alaska has been opposed in some quarters upon the ground that the greater portion of the mineral areas in these lands have already been entered, but I see no reason, however, why this should deter us from abolishing the law of the apex without prejudice to the existing rights which have been acquired under it.

The general mining laws should be amended by the addition of a provision requiring final entry and payment to be made upon all mineral and mill-site locations within a fixed period after date of location of the claims, exclusive of the time covered by bona fide pending adverse claims or protests. This will be in harmony with other laws relating to the acquisition of the title to public lands which almost without exception, provide that after the performance of certain acts by claimants they must, within a prescribed period, apply for patent and make the payments required by law for the lands sought. If mineral locators were required within a specified time to come forward with their applications for patent, the burden would be upon them to show the validity of their claims, by limitation many invalid claims would lapse, and where the claims are bona fide it would tend to incite the owners to a more diligent development thereof and a more careful compliance with the terms of the law.

The present law making deposits of mineral oils in the public domain subject to location and entry under the placer mining laws (act of Feb. 11, 1897; 29 Stat., 526) is unsatisfactory, from the standpoint of both the individual and the Government. It does not afford protection to the bona fide explorer while he is engaged in the expensive operation of discovering and exploiting the deposits, which in most instances lie far beneath the surface. When oil is discovered there is no adequate return to the Government and no legislative provision insuring legitimate development and preventing monopoly. I therefore suggest that the present law should be repealed and a law enacted providing for the leasing of such deposits, the law to contain provision for the protection of prospectors during an exploration period preliminary to the leasing of the lands after the discovery of oil therein. I also recommend the enactment of legislation to permit the disposition of the surface of lands containing, or believed to contain, deposits of oil, under appropriate agricultural land laws, reserving to the United States for future disposition the deposits of oil therein.

The withdrawal act of June 25, 1910, contains a very serious defect in the peculiar wording of the first portion of section 2 of the act, reading as follows:

> That all lands withdrawn under the provisions of this act shall at all times be open to exploration, discovery, occupation, and purchase under the mining laws of the United States, so far as the same apply to minerals other than coal, oil, gas, and phosphates.

The purpose of this provision is said to be the continuation of the right to mine the metalliferous minerals on withdrawn lands. Instead of saying this, however, the act permits the mining of *all* minerals "*other* than coal, oil, gas, and phosphates." This leaves no adequate protection for withdrawals of land valuable as potash or nitrates, which should be held by the Nation for the future use of its agricultural interests. Attempts have even been made to secure title to withdrawn lands for the mining of sand and gravel. While these entries have been rejected, more difficult questions arise in connection with claims for the mining of stone and gypsum. Such entries open the way to serious abuse, especially when attempted on land withdrawn for important public purposes like water-power sites or storage reservoirs. It is of real and pressing importance that the language quoted from section 2 of the withdrawal act of 1910 should be amended to read as follows:

> That all lands withdrawn under the provisions of this act shall at all times be open to exploration, discovery, occupation, and purchase under the mining laws of the United States, so far as the same apply to metalliferous minerals: *Provided*, That the rights of any person, etc.

## WATER-POWER LAWS.

The present laws relating to water power are hopelessly inadequate. The protection of the public interest is supposed to be accomplished by the statutory provision that permits for the development of water power shall be revocable at any time at the will of the administrative officials. This is thoroughly unsound both in principle and in practice. Many of those who would be willing to invest capital in the legitimate development of water power, but who wish to have the security which legitimate development rightfully demands, are unwilling to risk their investment on a tenure revocable at discretion. The result is that such capital as is invested in water-power development under Federal permit claims to be entitled to extraordinary returns on account of the extraordinary risk theoretically involved. At the same time the investors having once spent their money, proceed largely, if not entirely, upon the assumption that there is, in fact, no such risk as the revocable nature of the permit would imply. They assume, and properly assume, that the Government not only would not confiscate the investment, but that it will treat the investor fairly in any future readjustment of the terms of its grant. The result of the whole matter is that we have far less development than would be possible under a proper system and the development which we do have proceeds under what seems a legitimate excuse for exacting a larger return than should be necessary. It requires no elaborate argument to demonstrate that the substitution of water power for coal consumption is a clear public gain. Coal can be burned but once and in the process the greater portion of its potential energy is wasted by the imperfect methods and machinery now employed. The supply of falling water is perpetually renewed by natural forces and is wasted chiefly by nonuse.

The whole subject of water-power development and control should, in my judgment, receive the immediate consideration of Congress, and constructive legislation should be adopted without further delay. The limited powers of the Federal Government restrict its interest in this subject to power sites of two kinds—those upon the public domain and those on navigable streams. Some doubts have been expressed as to the authority of Congress to control the latter effectively. I do not think that these doubts are justified. I believe the Federal Government has adequate constitutional power to control water-power development both in navigable streams and upon the public domain and to exact compensation and, to impose proper conditions in either case. It is also apparent that the Federal Government can act more effectively than the States in many cases, and that this will be increasingly true as long-distance transmission and the yoking together of distant sources of water power not only justify but require the extension of Federal regulation over hydro-electric enterprises as agencies of interstate commerce. Many of our most important streams are interstate and some international in character. The States themselves have called and are calling upon the Federal Government to improve and to protect these streams. When such protection and improvement develops water power or adds to the value of water power already existing, there can be no sufficient reason adduced why the cost of the protection and the improvement should not be repaid in whole or in part out of the values thus created, nor can there be any adequate reason why the Federal Government should pay the cost of this improvement merely to turn over the revenues to the States to be used for other purposes than water development. Both on navigable streams and on the public domain the Federal Government will be more and more called upon to make expenditures for the protection of the watersheds and of the streams themselves. This expense should not be borne wholly by the general taxpayers if the expenditure produces special local benefits of the kind described. On the other hand, the development of water power, especially where it is sold in the form of electrical energy for lighting, heating, traction, and general power purposes, gives to the community where it is consumed a very necessary and important interest in the prices at which the electric energy is sold and in the character of the service. The regulation of both prices and service should, as a general rule, be committed to the State and to its agencies delegated for that purpose. The locality in which the water power is developed also has, on its part, a legitimate interest in the application of any rental which may be exacted for such development.

It is frequently said that power-site rentals must, in the last analysis, increase the price of power paid by consumers and thus be drawn from the local community. Two reasons why it is not true, even of a public utility, are suggested. In the first place there are frequently two localities—the producing and the consuming one—which are not identical. Electricity generated at a point in the national forests of the Sierras might be consumed either in San Francisco or Los Angeles. The rentals now paid for this development by the hydro-electric companies go in part to the support of schools and roads in the counties where the forests lie and in part to the Federal Treasury as a partial offset to the expense of maintaining the national forest. It is substantially true to say that the water-power revenue is expended in the mountains where the power is developed. Should this benefit be taken entirely from the mountain communities and bestowed upon the cities in the form of cheaper electric power? This conflict between the interests of the producing and consuming communities is destined to increase as better knowledge and improved apparatus give a longer and longer radius of high-tension electric transmission.

But even if the interests of the producing and consuming communities were identical, a reduction or abolition of water-power rentals could not, as a general rule, result in lower prices for electric energy. This is due to the fact that electricity is generated not only by water power, but also, and still more extensively, by steam power. There are very few communities where water power is, even approximately, the sole generating agent. The public can not, as a practical matter, fix one price for electricity generated by water power and another price in the same locality for the same commodity generated by steam. To do this where hydro-electric energy can not supply the whole demand would give a great and unjust advantage to an arbitrarily chosen and favored class of consumers. Now, steam is generally the more costly producing agent and therefore the price of electricity generated by water power is, in any locality, normally fixed by and but little lower than the price of electricity generated by steam power. Public regulation may reduce these two prices together, but the minimum limit of such reduction must be that price at which a well-equipped and well-managed steam plant could earn a proper return. This minimum limit is generally well above a fair return on the actual cost of water-power development. The difference goes to the hydro-electric corporation, unless retained for the public by rentals or taxes paid into the public treasury and expended for public purposes.

No correct or permanent solution of the water-power question can be reached until the interests of the State and of the Nation have been reconciled and coordinated, and this can now be done. The Federal Government should not part with any of its constitutional powers. Their exercise is certain in the future to become essential to the protection of the public interest. At the same time, it should not interfere with the State or local control except as the public interest may demand. Permission for the development of water power on navigable streams and from nonnavigable streams on the public domain should be granted by the Federal Government only on the payment to it of rentals which should be readjusted at periodic intervals of no longer than a decade under general provisions which will protect the interests of the investor and of the public. This compensation should always be reasonable and should generally be small in the case of new and experimental enterprises. As a general principle, the revenues derived in this way should be devoted to waterway improvement, with special care for the river system and watershed of the stream from which the revenues are derived. It is increasingly clear that proper development and protection of stream flow for all purposes, including those of navigation, domestic use, irrigation, and power require that the stream and its branches from source to mouth should be regarded as essentially a unit. This, indeed, is one of the reasons why the Federal Government is the most appropriate agency, if not the only available agency, for the comprehensive development of our waterways. Logically, the revenues derived from water power may belong to the Nation for its general use, but it would seem that national and local interests can best be reconciled by devoting these revenues to local improvements so far as such improvements are necessary or wise. Such a use removes one of the principal objections to Federal control.

The water-power permits issued by the Federal Government should also expressly provide that the permittee, by the acceptance of the grant, agrees to comply with such reasonable regulations of his rates and service as may be prescribed by the State or the appropriate State agency delegated for this purpose. Such a provision as this may technically not be necessary in many cases, as the use of water power for local public utilities usually requires State or local consent to the occupation of public streets and highways for its effective distribution, which gives a basis for local regulation, but the insertion of this provision in the Federal permit will remove any possible doubt. It should be so worded as to indicate that the Federal Government, without parting with any power it may possess in this regard, has adopted the general policy of delegating the function of regulation in all cases not interstate in character to the State and local authorities so long as these authorities protect the public interest. Such a system as I have suggested will result in a certain degree of automatic control of water-power permits in the public interest, for when the period of readjustment of the compensation arrives the Federal Government will naturally inquire into the condition of the grant, and if the grantee has been furnishing good service at reasonable rates and making only reasonable profits there will, ordinarily, be no occasion for increasing the compensation. If, on the other hand, for any reason whatever the local authorities have been lax and the grantee has been permitted to make an unconscionable profit, the Federal Government can increase its compensation and secure for the public in this way its proper share. In the exercise of this right, as in all of the terms of the grant, the interests of the grantee should not only be amply protected, but should be treated with liberality, so that the interest of the public may be promoted by the vigorous development of our water power. My purpose, however, is not to discuss the details of a water-power grant, but to point out that there is no necessary conflict between State and Nation in a rightly considered water-power policy and to urge the prompt adoption of such a policy and the passage of the necessary legislation.

### REORGANIZATION OF GENERAL LAND OFFICE.

There is also a pressing need for some fundamental reorganization in the General Land Office itself. The mass of administrative work which that office is called upon to handle requires the very highest degree of efficiency in its organization and personnel. The present system fails to take into consideration either the quantity of the work or the importance of the interests intrusted to its employees. This is especially true in the higher grades in the service, which now are clearly underpaid for work requiring the highest degree of technical skill and personal integrity. Men are paid comparatively small clerical salaries for work involving property interests of immense value and also matters of smaller financial importance but of the most serious consequence to individual claimants. These salaries should be increased so that they will at least approximate proper compensation for the character of work required. There is also another fundamental item which should be given immediate attention. The distribution of the public domain for actual settlement and development is properly and necessarily an administrative function. It can not be transferred to the courts for adjudication upon the facts arising in each individual case.

Questions of administration or of policy connected therewith must remain in the hands of the administrative force. At the same time in the interest of fair dealing toward the individual claimants their claims should not be finally passed upon solely by those who investigate and report upon charges of fraud or noncompliance with the statutes. To prevent this the General Land Office has sought to differentiate between the executive and the quasi-judicial functions which it exercises. This effort would be aided by sufficient appropriations to justify an increase of the membership and the pay of the Board of Law Review so that that board can be given the dignity and ability of a distinctively quasi-judicial tribunal with the jurisdiction and duty to determine the legal questions and issues of fact involved in contested claims under the administrative supervision of the Commissioner of the General Land Office. The right of appeal to the Secretary of the Interior should remain as at present, but the appropriations for the Office of the Assistant Attorney General for the Department should be increased to provide for a greater number of specially qualified assistants to be assigned to these appeals and to original quasi-judicial proceedings before the Secretary. There should, of course, be preserved the existing right of recourse to the courts to obtain their construction of the law in cases where the issue involved is purely one of law and not of fact. If the quasi-judicial force of the Department and of the General Land Office is strengthened as suggested, I am sure that the conflicting interests of the claimants and of the Government will be more carefully and correctly considered and decided than is now possible. The business of the Department will be expedited and all those who have contested claims before the Department for adjudication will be better satisfied.

## BUREAU OF NATIONAL PARKS.

There are twelve national parks, embracing over 4,500,000 acres, which have been set apart from time to time by Congress for the recreation of the people of the Nation. While public interest in, and use of, these reservations is steadily increasing, as shown by the growing number of visitors, adequate provision has not been made for their efficient administration and sufficient appropriations have not been made for their proper care and development. At present, each of these parks is a separate and distinct unit for administrative purposes. The only general supervision which is possible is that obtained by referring matters relating to the national parks to the same officials in the office of the Secretary of the Interior. Separate appropriations are made for each park and the employment of a common supervising and directing force is impossible. Many of the problems in park management are the same throughout all of the national parks and a great gain would be obtained and substantial economies could be effected if the national parks and reservations were grouped together under a single administrative bureau. Bills to create a bureau of national parks have heretofore been introduced in Congress, and in my judgment they should immediately receive careful consideration so that proper legislation for this purpose may be enacted. Adequate appropriation should also be made for the development of these pleasure grounds of the people, especially through the construction of roads and trails, and their proper care and maintenance. In several of the national parks there are large private holdings which should be acquired by the Government.

## RETIREMENT.

I earnestly recommend the enactment of legislation authorizing the retirement of employees who, after long and faithful service, are disabled by age or infirmity from the efficient performance of their duties. The civil servants of the Government, like those in the military and naval service, are debarred from the chance of large gains, the hope of which is a constant stimulus to men in private business. Moreover, those of technical or superior administrative ability are and must continue to be paid smaller salaries than they would command in private employment. It is therefore impossible for them to acquire financial independence or make due provision for old age, either by way of profits or by way of savings from their salaries. Considerations of humanity and justice might well be urged against the dismissal of employees who have given the years of their strength to faithful and efficient public service and against their assignment to the lower grades of menial or clerical duties as an alternative to dismissal. But I prefer to put the matter on other and more selfish grounds. The Government simply can not afford not to retire these employees with due and honorable provision for their old age, and this for two reasons.

In the first place, many able and energetic men serve the Government at salaries far below the commercial standard for like services. They choose to do so because the public service satisfies their best and highest ideals of personal integrity and professional achievement. Such men are continually forced out of the service by the necessity of making due provision for themselves and their families before old age comes upon them. If the Government would insure them against this peril it could continue to employ them at salaries far less than a private corporation would be compelled to pay. Every consideration of economy and sound business policy requires that their services should be retained on terms so favorable to the Government. The loss, taken in the mass, is irreparable, for the system operates as a survival of the unfittest by continually drawing off the more energetic and abler men, leaving a larger and larger proportion of the inefficient in the public service. In the second place, the Government is paying much if not most of the cost of a proper retirement system through the inevitable relative inefficiency of the present plan. Not only are superanuated employees dropped to and retained in the lower grades because of sympathy yielding to personal or political pressure, but in the higher grades, from which the rank and file of the service inevitably derives its spirit and tone, there is a tendency to retain men who have lost the alertness and enthusiasm essential to the highest efficiency of their own work, and still more essential for inspiring in and requiring of their subordinates such alertness and enthusiasm. Not only do they thus fail to make the positive contribution to the general efficiency of the service which is due from men in their position, but they have a negative effect in the same direction by blocking the avenues of promotion and legitimate ambition. The men below them not only fail to receive the proper stimulus of precept and example, but are at the same time deprived of the hope of promotion which ought to be the reward of efficient service.

This condition is now becoming apparent. It has been delayed by the fact that the widespread application of the principle of permanency in the public service goes back less than one generation, and by the further fact that the industrial and social problems of recent years have forced the Government into new fields of activity and thus compelled the organization of new bureaus and departments. These new administrative units have been largely recruited from young men who are still in the prime of life. Many of the older bureaus and departments have from similar causes largely increased their personnel, recruiting them chiefly from young men. This sudden expansion of governmental activity has postponed and mitigated the worst evils inherent in the present system; but sudden expansion can not continue indefinitely. We must face and provide for normal conditions of growth. Under such conditions general efficiency in the public service is impossible without due provision for the retirement of aged employees. This is attested by the experience and practice of foreign governments, which have long had a permanent civil service, and by that of large railroad and commercial corporations in our own country.

## LOWER COLORADO RIVER.

On June 25, 1910, in a special message you invited the attention of Congress to the situation along the lower Colorado River as then understood. Conditions appeared to be such that unless prompt and vigorous steps were taken a very large loss in land values to the people of the Imperial Valley would result. The suggestion was made that a suitable sum be placed at your disposal to meet this emergency. By resolution approved June 25, 1910, Congress appropriated $1,000,000 for the purpose of protecting the lives and property interests of the citizens in the Imperial Valley. To the Secretary of the Interior was delegated the supervision of the work. A detailed investigation of the physical conditions on the ground was made by a member of the Mississippi River Commission, who was subsequently employed to supervise the work. The preliminary report submitted by him, after thorough consideration, was approved and immediate steps taken looking to the actual construction of the project in accordance with the approved plans which it was believed would result in returning the Colorado River to its old channel. Delays in the completion of the necessary arrangements with the Government of Mexico were encountered, and a successful consummation of the project was imperiled by the rapidly approaching flood season, which rendered the work hazardous. The situation was further complicated by the disturbed political conditions in Mexico, as the result of which labor conditions on the project were greatly demoralized.

After determined efforts the break at Abejas River was successfully closed and levees on the west bank of the Colorado for a considerable distance north and south of the Abejas were constructed. The early summer floods again broke through at the Abejas, jeopardized the permanency of the work and ultimately resulted in considerable damage to the levees. The essential part of the damaged portions is readily susceptible of repair during the present low-water season, and such repair is believed to be vital to the interests of the people of Imperial Valley. This work is now being done.

By your direction I convened a board of persons interested in and familiar with conditions along the Colorado River to make a careful study of the work accomplished and to suggest plans for future operations. The board recommends that the work be continued along certain lines and is of the opinion that to meet the present emergencies the sum of at least $1,000,000 should be provided. The systematic treatment of the river is a problem to be worked out in connection with the Government of Mexico, and the board suggests the creation of an International Colorado River Commission, to be composed of Mexican and American engineers, with ample authority to investigate and report to their respective Governments a basis for the final adjustment of all questions affecting the use and control of the waters of the Colorado. I heartily concur in this recommendation. The problem is one of great magnitude and moment. The interests of the Government of the United States are such as, in my opinion, justify the early consideration of the entire subject by Congress.

Any provision for future operations along the Colorado River which Congress may see fit to make should authorize the expenditure of any portion of such fund within the limits of the Republic of Mexico in accordance with agreements heretofore or hereafter made with that Government.

I have heretofore transmitted to you for submission to Congress the following documents bearing on this matter:

(1) Report of J. A. Ockerson of May 20, 1911.

(2) Copy of letter of Secretary of Interior, dated June 1, creating board.

(3) Report of board, dated June 7, 1911.

(4) Statement of physical and related facts accompanying report of June 7, 1911.

## NEW BUILDING NEEDED FOR PATENT OFFICE AND DEPARTMENTAL RECORDS.

I call special attention to the congested condition of the buildings occupied by this Department and to the necessarily decreased efficiency of the clerical force because of overcrowding. Three of the bureaus of this Department—the Geological Survey, the Bureau of Mines, and the Reclamation Service—are located in rented quarters at an annual combined rental of $52,800. Good administration would seem to indicate that provision should be made for these bureaus to be housed in Government-owned buildings. The Pension Office and the Office of Indian Affairs in the Pension Office Building, the General Land Office and the Bureau of Education in the old Post Office Department building, and the Office of the Secretary and the Patent Office in the Patent Office Building are located in Government-owned buildings.

Each of the above branches of this Department has accumulated and is constantly accumulating records of priceless value to the Government. In some, notably the Geological Survey, the Patent Office, the Office of the Secretary, the General Land Office, and the Office of Indian Affairs, these records have accumulated to such an extent that it is beginning to be a grave question how to provide for future accumulations, and those now existing are crowded in every available space—in corridors, attics, workrooms, basements, and subbasements—constantly exposed to accumulating dust, dampness, and improper handling, to say nothing of the ever-existent grave danger from fire and consequent total destruction. There should be provided at the earliest practicable date a properly constructed fireproof central filing place for the records of this Department or a hall of records for the departmental service in the District of Columbia generally.

The most congested condition with respect to the clerical force occurs in what is known as the Patent Office Building, housing the Patent Office and the Office of the Secretary. This Department was organized and created by the act of March 3, 1849 (9 Stat., 395), and among the bureaus transferred to it under the organic act was the Patent Office. From the time of the Department's organization until 1853 the Department proper (that is, the Office of the Secretary, comprising the Secretary and his staff of assistants and clerical force, which now includes the Office of the Assistant Attorney General for the Interior Department) occupied rooms in a building rented by the Treasury Department. These quarters appear to have been unsuitable and inadequate, and the Secretary of the Interior in his annual report for 1851 (p. 34, H. R. Ex. Doc. No. 1, 31st Cong., 2d sess.) formally announced to the President and Congress his intention, as soon as the other wing of the Patent Office was completed, to transfer to it the Department proper and the different offices thereto attached, which proposition appears to have received congressional sanction. The total floor space of the Patent Office Building is 148,014 square feet, of which 114,060 square feet are assigned to the use of the Patent Office, embracing 934 employees, and of which

33,954 square feet are assigned to the use of the Office of the Secretary (including the Office of the Assistant Attorney General), embracing 266 employees.

When the Patent Office Building was erected it was evidently believed that provision was being made for the growth in volume of business and clerical force of the Patent Office, beyond any possibility of future overcrowding. The fourth story of this building was architecturally designed to provide an exhibition place for all the models which should accumulate, together with the scientific library. Before 1893 it became necessary to remove the patent models from the building and devote this space to clerical purposes. Wooden partitions have been erected in almost the entire space theretofore devoted to exhibition purposes, thereby cutting the space up into small rooms, poorly ventilated, badly lighted, and overcrowded with records, which space has been assigned to the use of various divisions of the Patent Office. The scientific library, which is on that floor, is so limited architecturally that it has become overcrowded, and it is almost impossible to provide the proper ventilation and to light it satisfactorily. In this space, under these conditions, it is necessary to provide accommodation for attorneys who from day to day are obliged to examine the records of patents issued or pending. Every effort has been made to prevent the accumulation of dust by the vacuum process of cleaning, but under existing conditions the practical results have been most unsatisfactory. Every available foot of space for clerical assistance and the filing of records in the Patent Office has been occupied by them, and I am convinced that the Department is now face to face with the proposition of renting outside quarters for the accommodation of the constantly expanding activities of the Patent Office.

The Patent Office througnout its existence has been self-sustaining, and according to the accounts kept by it has turned into the Treasury a total surplus of approximately $9,000,000. Attention is invited to the report of Secretary Garfield for the fiscal year ended June 30, 1907, at page 33; to the report of Secretary Ballinger for the fiscal year ended June 30, 1909, at page 33; and also to Secretary Ballinger's report for the fiscal year ended June 30, 1910, at page 49. Senate document 543, Sixty-first Congress, second session, shows an effort made to obtain relief for this situation by securing an appropriation of $220,000 for the erection of an addition to the Patent Office Building. This effort failed, and a renewal of the estimate has been submitted with the estimates for the fiscal year ending June 30, 1913 (Book of Estimates, p. 350). Even though the Office of the Secretary were removed from the Patent Office Building and provided with quarters elsewhere, it would be but a short time until the same condition would again exist, because the overcrowding now existing in the Patent Office, in relieving itself, would extend practically over the entire area now occupied by the Office of the Secretary.

I can not too strongly urge the grave necessity now present that steps be immediately taken to provide a new, modern, properly equipped building for the use of the Patent Office, constructed upon lines which will suffice for its future needs and growth and be a monument to the inventive genius of the American people. The space provided in such a building for future growth might be used for the priceless records of the other bureaus of the Department of the Interior until other fireproof buildings or a hall of records is provided.

## OFFICE OF ASSISTANT ATTORNEY GENERAL.

The following table in some degree illustrates the volume of work disposed of by this office in the year ended October 1, 1911:

*Work of office of Assistant Attorney General.*

| | Public lands. | | Indian. | Pension. | General opinions. | Disbarment. | Miscellaneous. | Total. |
|---|---|---|---|---|---|---|---|---|
| | Appeals. | On review. | | | | | | |
| Pending Oct. 1, 1910.. | 153 | 39 | 45 | [1] 536 | 2 | 3 | 73 | 851 |
| Received to Oct. 1, 1911.... | 3,142 | 532 | 9,922 | 514 | 254 | 12 | 2,251 | 16,627 |
| Total.... | 3,295 | 571 | 9,967 | 1,050 | 256 | 15 | 2,324 | 17,478 |
| Disposed of Oct 1, 1910, to Oct. 1, 1911. | 2,015 | 470 | 9,929 | [2] 597 | 238 | 12 | 2,151 | 15,412 |
| Pending Oct. 1 1911.... | 1,280 | 101 | 38 | 453 | 18 | 3 | 173 | 2,066 |

[1] July 1, 1911. The work formerly done by the Board of Pension Appeals was transferred to this office July 1, 1911.

[2] Since July 1, 1911.

Prior to the abolishment of the division system in the office of the Secretary in April, 1907, the office of the Assistant Attorney General was charged with the adjudication of appeals from the General Land Office and the preparation of opinions on miscellaneous questions of law. Little by little the scope of its work has been increased until it has included Indian, pension, reclamation, and other matters. In the six months prior to April 1, 1907, 1,163 matters were disposed of—an average of 269 a month. In contrast, an average of 1,285 a month marks the work done during the year ended October 1, 1911. The office was called upon to consider 17,478 matters during that period and disposed of 15,412. During the corresponding period in 1909 to 1910, 14,399 matters came before the office for consideration, and 14,084 were disposed of—an average of 1,174 a month.

Aside from these matters, and not recorded in the above table, there is handled in this office a large amount of correspondence between this

Department and individuals and between this Department and other executive departments of the Government, particularly with the Department of Justice, in relation to litigation; also the examination of bills pending in Congress and the preparation of reports thereon. Suits in the local courts against the Department are defended by the Assistant Attorney General for this Department. In the year ended June 30, 1911, 24 cases were disposed of in the Supreme Court of the District, in which the Department was successful in all but one, and this has been reversed on appeal to the court of appeals. In the latter court the Department submitted and was successful in 12 cases during the year. In addition to this there were many interlocutory proceedings.

Notwithstanding the great volume of work thus presented to this office for consideration and action, the disposal thereof has proceeded with great care and such dispatch as its importance and difficulties and the number of the force permitted.

## GENERAL LAND OFFICE.

The work in the General Land Office during the past year has been energetically pushed. The majority of the most important lines of work in the office are up to date.

There has been no relaxation in the work of the prosecution of frauds against the United States and the attempted unlawful acquisition of lands.

The closer scrutiny paid to applications under the "Carey Act" has demanded the devotion of a larger amount of time on the part of the field force to this work. Not only is an examination made of the land sought to be segregated, but the question of sufficiency of water and practicability of the proposed scheme is looked into.

Every care, by examination in the field, is also being taken that no mineral lands are lost to the United States under school land, railroad, or other grants, providing for the acquisition of agricultural lands only.

There has been a close cooperation between the work of the field force of the General Land Office and the work of the Geological Survey in the classification of lands.

The investigation of coal claims in Alaska is proceeding as rapidly as possible. A decision has been rendered in the so-called "Cunningham" cases, holding the entries for cancellation. Hearing has been had in one other group, and examination made on the ground in a large majority of the cases, to see whether or not a mine or mines have been opened in accordance with the provisions of law.

The total number of locations in Alaska coal claims is given as 1,125; the number of applications for patent, 521; number of notices of charges served, 172; number of answers to charges filed, 125; number of expiration notices served, 566; number of answers to expiration notices filed, 90; number of entries yet to be investigated as to good faith, 262.

Up to July, 1911, indictments returned in Alaskan criminal proceedings, affecting coal lands, covered 641 claims out of a total of 1,125 coal claims.

The vexed question of adjustment and adjudication of claims in the Imperial Valley, California, has proceeded very satisfactorily. This matter, which has been pending for so many years, has been virtually settled.

The total cash receipts from the sale of public lands, including fees and commissions on both original and final entries, for the fiscal year 1911, were $7,245,207.69. Miscellaneous receipts were as follows: From sales of Indian lands, $2,822,600.71; reclamation water-right charges, $892,414.29; sales of timber in Alaska, depredations on public lands, sales of Government property, and copies of records and plats, $129,704.91, making the aggregate total of cash receipts of the General Land Office for the fiscal year 1911, $11,089,927.60, a decrease of $373,996.46 from the preceding fiscal year.

The total expenses of district land offices and salaries and commissions of registers and receivers, incidental expenses, and expenses of depositing public moneys during the fiscal year ended June 30, 1911, were $870,242, a decrease of $3,395.33. The aggregate expenditures and estimated liabilities of the public-land service, including expenses of district land offices and surveys, were $3,195,759.38.

The total area of public and Indian land originally entered during the fiscal year 1911 is 17,639,099.54 acres, a decrease of 8,752,169.55 acres as compared with the area entered during the fiscal year 1910.

The area patented during the fiscal year 1911 is 12,272,495 acres, an increase of 1,289,345 acres as compared with the fiscal year 1910.

The number of patents issued during the fiscal year 1911 were 72,189, as against 72,080 for 1910.

During the past year there were approximately 215,300 acres of agricultural lands in national forests opened to settlement and entry in accordance with the provisions of the act of June 11, 1906 (34 Stat., 233).

### COMMISSIONER'S RECOMMENDATIONS.

The Commissioner of the General Land Office, in his annual report, recommends legislation providing for some changes in the administration of his office, and other matters of various kinds. Some of them have been discussed hereinbefore in this report. He makes a number of recommendations which should be given careful consideration. Special attention is called to the following:

(*a*) The abolishment of the office of receiver in the local land offices, and the substitution of a civil-service employee, drawing an adequate but smaller salary than that allowed under existing statute to the receiver; it is believed that a saving of about $150,000 per annum could thus be effected, and that better results would be obtained.

(*b*) The enactment of legislation authorizing the taking of proofs on the land. In this way the interests of both the settler and the Government would be better subserved and more expedition attained.

(*c*) An act making false swearing in relation to the character of the land of which entry is sought, or concerning the legal qualifications of the would-be entryman, an offense punishable by fine or imprisonment, or both.

(*d*) An act empowering registers and receivers to require a witness in a pending case to bring with him and produce papers, books, and documents in his possession which constitute material and important evidence.

(*e*) The renewal of the appropriation of $3,000 made by act of June 25, 1910 (36 Stat., 797), providing for the preparation and publication of the revised edition of the "Manual of Surveying Instructions."

(*f*) Legislation providing for the punishment of unscrupulous and incompetent professional locators by fine or imprisonment, or both.

(*g*) An amendment of the act of January 31, 1903 (32 Stat., 790), so as to provide for uniform fees chargeable by officers before whom depositions provided for in said act are submitted.

(*h*) The amendment of section 26 of the act of June 6, 1900 (31 Stat., 321), so as to subject mining claims to the easement of a public roadway, 60 feet wide, along and parallel to the shore line of navigable waters in Alaska, such as is now provided in section 10 of the act of May 14, 1898 (30 Stat., 409), entitled "An act extending the homestead laws and providing for right of way for railroads in the District of Alaska, and for other purposes."

## PUBLIC SURVEYS.

The first year's work under the direct system of surveys has been very successful. It is estimated that, in a survey of approximately 30,000 miles, the saving to the Government by the direct system, as compared with the contract system, will be about $5 a mile, or in the neighborhood of $150,000. In addition there is a saving of from one to two years in time in the final approval of the surveys performed.

## TEXAS-NEW MEXICO BOUNDARY.

The so-called "Clark" boundary line between Texas and New Mexico has been retraced and monumented in accordance with the provisions of the resolution passed by Congress February 16, 1911 (36 Stat., 1455). The work was done economically and efficiently.

## CAREY ACT.

The records of the Land Office show that there is an increasing demand for segregation lists under the Carey Act. During the last fiscal year there were examined in the neighborhood of 1,650,000 acres of selections by the various States to which the Carey Act applies. There have already been withdrawn under the act of March 15, 1910 (36 Stat., 237), for Carey Act exploration and survey, 3,500,000 acres.

## STATE AND TERRITORIAL GRANTS.

During the past fiscal year there were approved to States and Territories an area of 316,572.44 acres, of which 299,123.17 acres were school-land selections.

## RAILROAD GRANTS.

During the year 1911 there were patented on account of railroad and wagon-road grants an area of 1,152,827.77 acres.

## CHIPPEWA LOGGING, MINNESOTA.

During the past fiscal year there were logged under contracts on ceded Chippewa lands 80,005,150 feet of timber, of the value of $572,830.73, as compared with 88,503,880 feet of timber, valued at $553,005.42, during the year 1910.

## SALES OF CHIPPEWA PINE TIMBER.

On September 15, 1910, a sale of pine timber was held at Cass Lake, Minnesota, at which there was sold timber estimated to contain 51,310,000 feet of white pine and 263,475,000 feet of Norway pine, the total amount of the accepted bids being $2,709,330.04, an average price of $8.59 per thousand feet. This was the largest sale of Chippewa timber yet held. All of the unsold pine timber on ceded Chippewa lands was offered for sale at Cass Lake, Minnesota, on October 21, 1911. The price paid for timber on ceded Chippewa lands sold at the different sales is $5,933,242.41.

## GEOLOGICAL SURVEY.

The scientific investigations of the Survey have been continued along lines similar to those followed in other years and the usual number of contributions have been made to the knowledge of geology and related subjects. The appropriations for the work of the United States Geological Survey for the fiscal year 1910–11 aggregated $1,477,440.

*Classification of public lands.*—Among the special features of the year's activities the work in the public-land States should be given first place.

The field investigations and examinations have been more extensive and more detailed, and reports covering a wider range of subjects have been prepared and submitted to the Secretary's Office and to the General Land Office and the Office of Indian Affairs. The Geological Survey is called on for reports covering lands listed for patent and lands which it is proposed to eliminate from the Indian or forest reservations and throw open for settlement, in order that their mineral or nonmineral character or adaptability for power or irrigation purposes may be determined. All Carey Act lists are submitted to the survey for a statement as to the sufficiency of the water supply and the adequacy of the proposed plan of irrigation before the lists are approved for segregation.

Coal lands have been classified during the year at an increased rate. The area appraised as coal land during the fiscal year 1910–11 exceeded that so appraised in the preceding year by 3,000,000 acres; and the area classified as noncoal land during 1910–11 is 2,386,444 acres greater than that so classified in 1909–10. On the other hand, the average price fixed per acre and the total appraised value are notably less for the last year than for the preceding year. The difference is due to the large acreage of lignite and low-grade subbituminous coals in eastern Montana and Wyoming appraised at the minimum value fixed by law.

Two great withdrawals of land for determination of its coal character were made during the year—one in the Dakotas and one in Idaho. The restorations have, during the past fiscal year, been more than offset by the withdrawal of areas indicated as coal bearing by new information or by a study of data already at hand. However, in Colorado, Montana, and Wyoming, where the field work was concentrated during the season of 1910, the restorations far outbalance the withdrawals. It is probable that the withdrawn area has reached its maximum this year and will steadily decrease hereafter.

During the year 630,604 acres in California and Wyoming were withdrawn from entry to be examined for oil, and 1,232,719 acres in the same States, shown by field examination to be non-oil lands, were restored, making the withdrawals for oil outstanding June 30, 1911, 3,970,429 acres in eight States and Territories. In addition all oil lands in Alaska, comprising an unknown area, were withdrawn during the year.

In the early part of the fiscal year the outstanding withdrawals of phosphate land made by the Secretary of the Interior were ratified by the President under the act of June 25, 1910. A deposit of phosphate rock in southwestern Montana, similar in character to the deposits of Utah, Idaho, and Wyoming, and at the same geologic horizon, was discovered by the survey. This discovery is important not only because of the quantity of phosphate found, but because it indicates the possibility that the deposits of phosphate rock are distributed over a much wider territory than had formerly been supposed. The area withdrawn as a result of this discovery comprises 33,950 acres, which, with withdrawals in Florida and Utah, make a total of 65,589 acres withdrawn during the year. Field examinations in Idaho resulted in the restoration of 149,929 acres, leaving in phosphate withdrawals June 30, 1911, a total of 2,399,416 acres.

The completion of the classification of lands within the Northern Pacific Railroad grant in Montana and Idaho provided for in the sundry civil act of June 25, 1910, was made by the Survey. Work of the year resulted in the classification of 288,465 acres.

The work of classifying the public lands with relation to their value for water-power development has followed the general plan pursued in previous years. On July 2, 1910, the earlier withdrawals, amounting to 1,454,499 acres, were ratified and continued by the President. As a result of field investigations, 143,555 acres included in withdrawals were determined to be without value for power purposes and were restored to the public domain and 204,460 acres were included in new withdrawals, the total area withdrawn at the close of the fiscal year amounting to 1,515,423 acres.

Eight hundred and fifty-one applications for right of way across the public lands for railroads, canals, ditches, and reservoirs for irrigation, mining, and municipal supply and power development have been passed on by the Survey.

Thirty-one segregation lists prepared under the Carey Act have been referred during the year to the Survey for report. The projects represented by eight of these lists were determined to have sufficient water supply for reclaiming the lands considered. Examination of 18 applications showed that under the plan of irrigation proposed by the State the projects contemplated would have an insufficient water supply, and reports were made accordingly. At the close of the fiscal year three applications were awaiting a detailed statement by the applicants of the plan of reclamation proposed, and two were under consideration.

The designation of non-irrigable areas as subject to entry under the enlarged-homestead act has called for an increasing amount of field investigation. By the act of Congress of June 17, 1910, the provisions of the original act, somewhat modified, were extended to the State of Idaho, and a large area in Idaho has been opened to such entry. The greater part of the investigations and designations under the enlarged-homestead act has been made on account of petitions for action on specific tracts. Two hundred and forty-eight petitions were received and 162 were acted upon. At the close of the year 137 petitions were pending, most of them awaiting reports on uncompleted field examinations.

There is hereto appended (p. 75) tabular statements showing progress of coal classification and valuation, oil land withdrawals, phosphate land withdrawals, power site withdrawals, designations under the enlarged homestead act in the various States and Territories, and metalliferous classification of Northern Pacific Railroad grant lands in Montana and Idaho.

*Geologic Branch.*—Geologic surveys and investigations were continued in 39 States and Territories by a force of 129 geologists. Over 76 per cent of the appropriation was expended in the 16 States and Territories containing the large areas of public lands. Systematic detailed surveys of important mining districts were continued in Colorado, Utah, Nevada, California, Idaho, Montana, and Arizona, and general geologic and paleontologic investigations were conducted in all parts of the country.

In Alaska 12 field parties covered 13,815 square miles by reconnoissance topographic surveys and 36 square miles by detailed topographic surveys. Detailed geologic surveys were made of 321 square miles and geologic reconnoissance surveys of 8,635 square miles. Considerable time was also spent in studying special problems connected with the mineral deposits. The investigation of the water supply in placer districts covered an area of approximately 6,500 square miles, and included 69 gauging stations maintained and 429 measurements of stream volumes. Fifteen of the 30 mining districts of Alaska which are being developed were visited by members of the staff.

The subdivisional survey of public lands in Alaska was begun. The work accomplished in the short season after the appropriation became available included two astronomical determinations of latitude, longitude, and azimuth, measurement of a base line and establishment of a system of triangulation, the survey of 108 miles of meridian and base lines and township extensions, with some section lines.

During the fiscal year the work of the Mineral Resources Division consisted of the preparation of reports on mineral resources of the United States for the calendar years 1909 and 1910. The statistics for 1909 were collected in cooperation with the Bureau of the Census. The field work of collecting the statistics was done by the Bureau of the Census through personal visits of a large force of agents, and it was thought that this plan would greatly expedite the work. Experience showed, however, that it took very much longer to get the data in this way than it would have taken by correspondence, the usual method pursued by the Survey.

*Topographic Branch.*—The total new area topographically mapped was 23,272 square miles, making the total area to date in the United States 1,131,037 square miles, or about 37 per cent of the entire country. In addition 6,460 square miles of revision or resurvey were completed, making the total area of actual surveys for the season 29,732 square miles. Topographic surveys were also carried on in Hawaii, the area mapped during the fiscal year being 224 square miles. The field force included 145 geographers and topographers with 68 temporary technical assistants.

*Water Resources Branch.*—The increase of $50,000 in the appropriation for investigations of water resources permitted a considerable extension of this work during the fiscal year, although it was necessary, in order to perform important public-land classification work, to allot 82 per cent of the total appropriation for work west of the one-hundredth meridian. The investigation of water-power sites, rights of way, etc., on the public lands was first performed by the engineers of the division of surface waters in connection with their measurements of stream flow. This is now assigned to a new division of water utilization.

At the end of the year the total number of stream-gauging stations maintained was 1,105. In addition to the foregoing, records ready for publication were received at the end of the year from private parties for about 100 stations. Underground waters were studied in California, Arizona, and New Mexico.

*Examinations under the Weeks Act.*—The act approved March 1, 1911, which provides for the acquisition of land for the purpose of conserving the navigability of navigable streams, imposed a new duty on the Geological Survey. Section 6 of the law provides for an examination by the Geological Survey of land whose purchase is under consideration and the submission of a report based thereon to the Secretary of Agriculture "showing that the control of such lands will promote or protect the navigation of streams on whose watersheds they lie."

This work was prosecuted in Georgia, Tennessee, and New Hampshire in May and June, resulting in the submission of reports favoring the acquisition of lands in two localities before the end of the fiscal year. These reports covered tracts in Fannin and Union Counties, Georgia, and in Blount and Sevier Counties, Tennessee, comprising 31,377 and 58,213 acres, respectively.

*Publications Branch.*—The Survey's success in reaching the public with the results of its scientific work may be measured by the distribution of its publications. In spite of the organization of the Bureau of Mines and the consequent elimination of its popular bulletins from the Survey's publications, the total number of reports and maps distributed by the Geological Survey in 1911 was

1,208,797, an increase of 6 per cent over the corresponding figures for 1910. An even larger percentage of increase is shown in the number of letters received containing remittances for such publications as are sold, while the receipts for topographic maps increased about 10 per cent. The total distribution of topographic maps, which includes congressional distribution, exchanges, and issue for departmental use, as well as the half million maps sold, increased 15 per cent. The total distribution to the public of books and maps is equivalent to more than 99 per cent of the number of copies received during the year from the Government Printing Office and the Survey's engraving and printing division. The total publications included 136 volumes, 91 topographic maps, and 5 geologic folios.

*Administrative Branch.*—The mails showed increases over the business of the preceding year. The roll of Survey members holding secretarial appointments numbered at the close of the fiscal year 862 persons, compared with 958 the year before. The principal change was the transfer of employees to the Bureau of Standards and the Bureau of Mines at the beginning of the year. The Survey library now contains 86,000 books, 100,000 pamphlets, and about 100,000 maps, and the collection is restricted to publications bearing upon the scientific work of the Bureau.

## RECLAMATION SERVICE.

The act of Congress approved June 17, 1902, known as the "reclamation act," set apart as a fund for the reclamation of arid lands all moneys received from the sale of public lands in certain of the Western States and Territories, excepting the 5 per cent of the proceeds of such sales set aside by law for educational and other purposes. The actual receipts from this source to June 30, 1910, were $65,584,801.32, and the estimated total receipts to June 30, 1911, including $213,998.57 from sale of town-site lots, are $71,717,990.16. The net investment of this fund in reclamation works on June 30, 1911, amounted to $60,940,834.08.

The act requires the Secretary of the Interior to determine and return to the reclamation fund the estimated cost of construction, and entrymen and private landowners receiving water from reclamation projects are therefore required to contribute their proportion of the cost of construction, operation, and maintenance of the project wherein their lands are situated. The cash receipts from this source to June 30, 1911, were:

*Cash returns to reclamation fund to June 30, 1911.*

| | |
|---|---|
| Water-right building charges | $1,533,175.63 |
| Water-right operation and maintenance charges | 517,393.85 |
| Total | 2,050,569.48 |

In addition, sales of water to towns and cities, leases of power developed in projects, rentals for irrigating water, miscellaneous services and sales, etc., have produced an additional revenue of $3,288,719.07, which, under the respective laws authorizing these transactions, is credited as a reduction of the cost of the projects from whence the receipts are derived.

No new projects have been undertaken since March 4, 1909, but prior to that date 32 primary projects had been undertaken, the net investment in which on June 30, 1911, amounted to $59,989,158.46, as is shown in the following table:

*Net investment in reclamation projects to June 30, 1911.*

| State and project. | Net investment. |
|---|---|
| Arizona: Salt River | $9,164,437.56 |
| Arizona-California: | |
| Colorado River | 43,659.73 |
| Yuma | 4,313,868.21 |
| California: Orland | 499,004.53 |
| Colorado: | |
| Grand Valley | 83,683.71 |
| Uncompahgre | 4,509,697.63 |
| Idaho: | |
| Boise | 4,515,525.06 |
| Minidoka | 3,741,216.57 |
| Kansas: Garden City | 380,030.09 |
| Montana: | |
| Huntley | 853,472.76 |
| Milk River | 911,487.99 |
| Sun River | 768,493.35 |
| Lower Yellowstone | 2,922,442.00 |
| Nebraska-Wyoming: North Platte | 5,130,965.75 |
| Nevada: Truckee-Carson | 4,103,346.71 |
| New Mexico: | |
| Carlsbad | 571,181.37 |
| Hondo | 349,212.20 |
| New Mexico-Texas: Rio Grande | 290,746.75 |
| North Dakota: Missouri River pumping | 845,474.73 |
| Oklahoma: Cimarron | 8,873.17 |
| Oregon: | |
| Central Oregon | 40,416.67 |
| Umatilla | 1,206,391.31 |
| Oregon-California: Kalmath | 1,812,476.07 |
| South Dakota: Bellefourche | 2,683,345.04 |
| Utah: Strawberry Valley | 1,214,411.90 |
| Washington: | |
| Okanogan | 589,866.49 |
| Yakima | 4,905,181.83 |
| Wyoming: Shoshone | 3,580,249.28 |
| Total | 59,989,158.46 |

In addition, there had been invested in secondary projects, June 30, 1911, $586,988.94; in town-site development, $12,997.05; in Indian irrigation (reimbursable), $317,392.23; and for general expenses, $34,297.40, making a grand total of $60,940,834.08. In view of the immense areas of land included, the magnitude and expense of the engineering work necessary to provide for their reclamation, and of the importance to the waiting settler and landowner that water be applied to the land and reclamation effected as soon as possible, the efforts of the Department have been directed toward the completion of projects already undertaken rather than the search for or undertaking of new projects. The following table contains a summary of the results of the reclamation work from June 30, 1902, to June 30, 1911:

*Summary of results of reclamation work, June 30, 1902, to June 30, 1911.*

| | | | |
|---|---|---|---|
| Material excavated | cubic yards | | 77,148,712 |
| Class 1 | cubic yards | 67,658,616 | |
| Class 2 | do | 5,136,331 | |
| Class 3 | do | 4,353,765 | |
| Volume of storage dams | cubic yards | | 7,192,787 |
| Volume of dikes | do | | 3,338,532 |
| Available reservoir capacity | acre feet | | 4,747,770 |
| Number of tunnels | | | 68 |
| Aggregate length of tunnels | feet | | 101,365 |
| Canals carrying less than 50 second-feet | miles | | 4,341 |
| Canals carrying from 50 to 300 second-feet | do | | 942 |
| Canals carrying from 300 to 800 second-feet | do | | 387 |
| Canals carrying more than 800 second-feet | do | | 291 |
| Canal structures costing less than $500 | | | 22,226 |
| Canal structures costing from $500 to $2,000 | | | 847 |
| Canal structures costing over $2,000 | | | 529 |
| Number of bridges | | | 2,223 |
| Aggregate length of bridges | feet | | 47,310 |
| Riprap | cubic yards | | 336,056 |
| Paving | square yards | | 344,891 |
| Cement used | barrels | | 1,245,827 |
| Concrete | cubic yards | | 1,066,310 |
| Roads | miles | | 570 |
| Telephone lines | do | | 1,694 |
| Telephones in use | | | 724 |
| Buildings erected | | | 548 |
| Offices | | 65 | |
| Residences | | 258 | |
| Barns and storehouses | | 225 | |
| Area of lands for which water can be supplied | acres | | 1,025,609 |
| Acreage included in projects now under way | | | 3,101,450 |

## BUREAU OF MINES.

The Bureau of Mines was established by an act of Congress approved May 16, 1910 (36 Stat., 369), and effective July 1, 1910. Its main object is to aid in lessening the loss of life and waste of resources in the mining, quarrying, metallurgical, and other mineral industries of the country. The enabling act not only outlined the Bureau's duties, but transferred to it from the Geological Survey the work of analyzing and testing coals, lignites, and other mineral fuel substances, and investigating the causes of and means of preventing mine explosions. The headquarters of the Bureau were established in Washington, D. C., on Eighth and G Streets Northwest. Its director was appointed September 3, 1910.

The investigative work of the Bureau during this first year of its existence has related mainly to two subjects: The study of fuels belonging to or used by the Government and inquiry into the causes and means of prevention of mine accidents. The first of these, for which Congress made an appropriation of $100,000, has had to do primarily with the purchase, for the use of the Government, of coal, aggregating in cost about $8,000,000; the most efficient methods of using this coal at the various heating, power, and lighting plants of the Government and on board Government ships; and the safest and most efficient methods of storing coal at naval stations, army posts, etc. In addition to the large number of furnace-fuel tests that this work involved, more than 10,000 samples of coal were analyzed in the laboratories of the Bureau. Investigations relating both to the efficient storage of coal and to the causes and prevention of spontaneous combustion of coal stored in bins or in the bunkers of ships have been conducted by the Bureau in the navy yards at Key West, Norfolk, and Portsmouth and on the Isthmus of Panama. The fuel investigations have also included the testing and analyzing of a large number of samples of fuel oil and the preparation of specifications for use by the Government in the purchase of both oil and coal for fuel purposes.

The investigations into the causes and means of prevention of mine accidents have been extended as rapidly as circumstances would permit, but so far have not progressed to the needs of the coal-mining industry. Their chief aim has been to determine the causes of mine explosions; to make safer the use of explosives and electricity in mines; and to reduce the risks through falls of roof, the use of open lights, and other mining conditions.

In carrying on these investigations the engineers of the Bureau have used every variety of laboratory equipment available; they have examined the coal mines in many parts of the United States; and they have opened near Pittsburgh, Pennsylvania, a small mine, where experiments are conducted to determine, under working conditions, how gas and dust explosions are caused and how such explosions may be prevented.

Early in the examinations of mine disasters it was found necessary to provide in the different important coal fields facilities for use by the engineers of the Bureau in entering mines in which disasters had occurred while these mines were still full of poisonous explosive gases, in order that the examinations might be made while the evidences of the disaster were still fresh. Such prompt examinations are also useful in rescuing entombed miners. To meet this immediate need, and with a view to the development of future agencies, there have been established by the Bureau six mine-rescue or mine-safety stations, one each at Pittsburgh, Pennsylvania; Knoxville, Tennessee; Birmingham, Alabama; McAlester, Oklahoma; Urbana, Illinois; and Seattle, Washington. There have also been purchased seven mine-safety cars, which have been equipped as far as practicable with mine-rescue and fire-fighting apparatus. These seven cars have headquarters as follows: One each at Billings, Montana; Trinidad, Colorado; Evansville, Indiana; Huntington, West Virginia; Pittsburgh, Pennsylvania; and Wilkes-Barre, Pennsylvania; and one at Rock Springs, Wyoming, and Salt Lake City, Utah. Each one of these cars has been moving from point to point, carrying a mining engineer and two experienced miners.

With a view to recommending proper regulations to prevent accidents in American mining, quarrying, metallurgical, and other mineral industries, it has been necessary to make a study of the laws, rules, and regulations existing for this purpose in other important mining countries. This work is now well under way.

Notwithstanding the newness of the work and the many preliminary difficulties in the way, the progress made in behalf of greater safety in mining has been gratifying. The Bureau is gradually winning the hearty cooperation of mine workers, mine owners, State mine inspectors, and manufacturers of explosives and mine equipment. In coal mines black powder is rapidly giving place to safer explosives; safety lamps and other appliances are being increasingly used; improvements in electrical installations are under investigation; mine explosions are being better understood and are becoming less frequent; mine safety demonstrations, in connection with the work of the stations and cars, have been witnessed and participated in by more than 100,000 miners; over 14,000 miners have received some training in rescue and first-aid methods; and more than 500 sets of mine rescue equipment have been installed at the larger coal mines located in different parts of the country.

There are some urgent needs in connection with the continuance and extension of this work. Two or three additional mine safety cars are needed, and the work of all the cars should be continued throughout the entire year. The investigations looking to the prevention of accidents should be extended to include metal mines, quarries, and metallurgical plants. There are 1,500,000 men associated with these hazardous occupations who need to be reached and enlisted in this movement for greater safety, and there should be no unnecessary delays in doing this. The testing of explosives, the fees from which go to the miscellaneous receipts of the Treasury, should be more adequately provided for, in order that such testing may be kept current. The statistical data concerning accidents in the mining, quarrying, and metallurgical industries have been far from complete in the past, and there have always been serious delays in their collection and publication. In many parts of the country no such statistics are collected, but the assembling of the data is essential to the formulation of intelligent plans for preventing mine accidents. There is, therefore, serious need that the Bureau of Mines be empowered to collect and publish statistical data with a degree of thoroughness commensurate with the importance of the subject.

There is also serious need for the enlargement of the work of the Bureau to include a thorough investigation into various branches of the mining industry, with a view to lessening the waste of essential mineral resources. Such investigations would unquestionably prove beneficial to the country. The results of carefully conducted inquiries show that the present losses in coal mining approximate 250,000,000 tons of coal per annum; and that the waste in metal mining and metallurgical industries ranges from 10 to 50 per cent of the total possible production. This waste of mineral products—many of them destroyed or lost beyond the possibility of future recovery—means a serious drain on the Nation's supply. In dealing with mineral resources, in contrast to rainfall, forests, or agricultural products, it should be understood that of mineral wealth the Nation has only one supply, which, when exhausted, it can not replace.

The buildings and grounds at Pittsburgh now occupied by the Bureau of Mines for its investigations are inadequate for its needs, unsuited to its purposes, and are held subject to the wishes and needs of another department of the Government. This situation should be remedied in a manner commensurate with the importance of the work that the Bureau is required to do.

## OFFICE OF INDIAN AFFAIRS.

The Indians in the United States number slightly more than 323,000, of whom about one-third are members of the Five Civilized Tribes in Oklahoma. All are in process of absorption with the general mass of American citizenship. When the process is complete with respect to any individual Indian he will have lost his tribal status, received in severalty his share of the tribal property, and been freed of all restrictions in dealing with it. He then has the same status as any other citizen and the guardianship of the Federal Government over him is at an end.

The Indian Service is engaged in the work of helping the Indians to fit themselves for American citizenship and in preserving and developing their property until they are able to take full charge of it. This work calls for administrative business ability, knowledge of practical sociological movements, and effective sympathy. The personal interests under the care of the service are of the greatest importance and are mainly concerned with three subjects—health and morals, industrial training, and general education. The property interests involved are of great value and complexity, including lands allotted to the Indians in severalty and held by them under restrictions which in effect make the Government the guardian of the Indian. The unallotted Indian lands are in part agricultural and in part consist of undeveloped forests, minerals, water power, and other natural resources which involve the general social and legal problems presented by like resources on the public domain, together with peculiar difficulties due to the beneficial ownership of the Indians.

*Health and morals.*—The Indian Service is earnestly endeavoring to improve living conditions and to prevent disease among the Indians. More than 52 gatherings of Indians and service employees for instruction in hygienic living have been held during the past year, with an aggregate attendance of more than 10,000. Such subjects as ventilation, disposal of garbage, care of milk, water supply, the prevention of tuberculosis and trachoma are considered. The service is endeavoring whenever new buildings are erected to see that they are built in conformity with modern ideas of sanitation. Eighty-eight field matrons are employed to work among the homes of the Indians. Their work has proved very effective in reducing infant mortality, and in helping the children to sound health. Vigorous efforts are being made to stamp out existing disease. One hundred physicians give their whole time to schools and agencies, and are assisted by 60 physicians who are under contract to give a part of their time to attendance upon Indians. The four sanitoria for tubercular patients have been enlarged, and the hospital for trachoma at Phoenix, Arizona, continued. The urgent necessity for the health propaganda is patent from returns of the physicians; they report 961 deaths from tuberculosis under their notice, attendance upon over 16,000 cases of tuberculosis, and treatment of 7,400 cases of trachoma, a disease which three years ago was practically unrecognized.

In the past year 1,473 cases of persons charged with selling liquor to Indians, or introducing it into the Indian country, were disposed of. One thousand one hundred and sixty-eight convictions resulted, 265 dismissals, 6 disagreements of the jury, and there were but 34 acquittals. There is a steadily increasing tendency on the part of local authorities to assist the officers of the Government in the work of suppressing this liquor traffic.

*Industry.*—Industrially the Indians are making much progress, particularly in farming. Reports from all parts of the field show that Indians who had not cultivated land have begun to farm, that Indian farmers are extending the acreage they work, and that they are raising larger and more diversified crops than before. The commissioner reports that during the year Indians farming for themselves had under cultivation at least 700,000 acres of land. At 22 reservations demonstration farms were used that Indians might have practical illustration of what they can expect to do with their land. In the Southwest, experiments were conducted with the cooperation of the Bureau of Plant Industry of the Department of Agriculture, to determine the most satisfactory crops for Indian lands and to introduce profitable new crops,

Apart from farming, Indians all over the country are entering gradually into ordinary industrial activities. During the past year Indians in Arizona and New Mexico were paid wages amounting to $260,000. Two thousand of the 6,000 regular employees in the Indian Service are themselves Indians.

*Education.*—The work of the Indian schools is largely industrial. Each boy or girl spends half of each day in farming, in machine shops, in the barns, or in the laundry, sewing room, or kitchen. This plan is carried out not only at boarding schools, but also at the 223 day schools maintained. One of the results is that it usually takes an Indian child two years to do the class-room work of an ordinary school year, but it is believed that the increase in industrial knowledge more than compensates for this slowness. It has been so well demonstrated that in cases where the Indian is capable of being educated with white children he profits from contact with them, that the service has made every effort to increase the number of Indian children who get an education in white schools, and this past year showed more than 11,000 Indian children so educated. Careful investigation in the past year has shown that there are some 9,000 Indian children who are not as yet going to any school, but for whom the Indian Service is now trying to provide facilities. The total number of Indian children in schools of every character during the past year was about 39,800, showing an increase over the former year of about 2,000.

The approximate value of school and agency plants is $8,500,000. In the fiscal year a total of $785,000 was spent for repairs and new construction.

*Property.*—Allotment of Indian lands in severalty has continued. During the past year approximately 2,000,000 acres were allotted to 13,000 Indians.

The act of June 25, 1910 (36 Stat., 855), requiring the Secretary of the Interior to ascertain the heirs of deceased allottees and their competency has greatly increased the work of the Indian Office. Many allotments are now of 20 years' standing, and through difficulty in obtaining reliable testimony questions of fact have become hard to solve. During the year the heirs of 800 deceased allottees have been ascertained.

The question of the extent to which leases of allotments should be permitted involves difficult questions. Only for the relatively small class of allottees who are incapacitated for farming or other work is leasing advisable. During the year the sale of 340,000 acres was considered by the Indian Office, and 150,000 acres were sold for a total of almost $2,500,000, an average of $16 an acre.

There are some $10,000,000 on deposit in banks throughout the country to the credit of individual Indians, but only subject to disbursement under the supervision of the Indian Service. Able-bodied Indians who can get work are not allowed to use their money for ordinary expenses, but are liberally encouraged to use it for building houses, buying stock and farm implements, and generally improving their lands.

*Protection of Indians against fraud.*—Most of the long-pending suits to annul deeds of their allotted lands made by the Mexican Kickapoo were settled in the Indians' favor. Out of 75 allotments 69 are to be restored with mesne profits, and the Government will use its influence to secure the return of such consideration as the Indians had received. Similar settlements are expected in the remaining six cases.

Since the close of the fiscal year prosecutions in Seminole County, Oklahoma, for frauds against minor and full-blood Indians have resulted in the conviction of 5 of the 6 principal defendants and their sentence to the State pentientiary for terms of from 7 to 14 years, and recently 21 additional indictments were returned against 7 individuals. In McCurtain County, Oklahoma, concerted efforts by State, Federal, and tribal officials resulted in an investigation of probate matters that brought about the resignation of the county judge and the recovery for Indian minors of over 4,100 acres of land and about $65,000; furthermore, State officials have secured an agreement by which three of the largest purchasers are to submit to a special board of arbitration the titles to all lands acquired from Indian minors through the local probate court.

As the outcome of 207 suits involving town lots fraudulently acquired in the Creek Nation $85,000 have been recovered, together with 94 lots worth about $60,000. Twenty-five suits are still pending.

On the White Earth Reservation in Minnesota vigorous action has been taken to annul deeds unlawfully procured from full-blood and minor Indians and to punish the guilty persons. In the fiscal year 901 suits in equity were filed and the total number will be 1,086. Complete success in these suits will mean the recovery of 142,000 acres of land valued at over $2,000,000 and timber estimated to be worth $1,755,000 on behalf of more than 1,700 Indians, forming almost 34 per cent of the White Earth allottees.

*Irrigation and drainage.*—For the year 1911 Congress appropriated slightly in excess of $1,300,000, all but $259,000 of which was made reimbursable to the United States, for irrigating and draining Indian lands. In the State of Washington the Indian Service is very economically draining 30,000 acres of swamped land. In the course of new irrigation construction under this appropriation the Indian Service during the year provided facilities for irrigating about 25,000 acres and through the use of other funds it placed 7,300 acres under ditch Furthermore, the Reclamation Service has had under construction for the Indian Service four extensive projects; the Pima project in Arizona, the Blackfeet, Flathead, and Fort Peck projects in Montana.

Altogether, more than 300,000 acres of Indian land have been placed under ditch at a cost of about $5,000,000. The bulk of the money appropriated by Congress for this irrigation is, under the various statutes, to be reimbursed when the lands are in successful cultivation. In constructing irrigation works, care is taken to employ Indian labor as much as is possible. Only a small portion of the acreage placed under ditch has as yet been cultivated by the Indians. There is need of persistent effort to persuade the Indians to use the irrigation facilities provided for them.

*Timber.*—The timber on Indian land is now estimated at 34 billion feet, worth approximately $76,000,000. The work of taking proper care of this timber and disposing of the mature trees is furnishing employment for a very considerable number of Indians, as well as increasing the revenue of various tribes and thus furnishing means for development of the Indian lands. In the past fiscal year no large sales were made. The two most extensive logging operations continued under contracts were at the Bad River Reservation, Wisconsin, where 84,000,000 feet were cut, yielding $503,000, and upon the ceded Chippewa lands in Minnesota, where 80,000,000 feet were cut, yielding $578,000.

The Neopit lumbering and milling project on the Menominee Reservation, in Wisconsin, for the first time showed a clear profit—$11,200; the total receipts from sales of manufactured lumber were $424,000. On an average 205 Menominees, slightly in excess of 38 per cent of the male members of the tribe over 18 years of age, were employed, together with 56 Indians of other tribes. Thus the project has become an important school of industry for the Indians.

## FIVE CIVILIZED TRIBES.

Much progress has been made in the matter of closing out the tribal affairs of each of the Five Civilized Tribes. The work of enrollment of citizens and allotment of lands has been practically finished.

In the Cherokee Nation some deeds are yet to be delivered, and there remain small amounts of surplus lands which are now being offered for sale. There is also still pending litigation affecting the claims of some 5,600 newborn Cherokees, and another case involving the rights of about 1,720 freedmen who claim to be entitled to enrollment. Until these suits are disposed of it will be impossible to complete the closing out of the affairs of the Cherokee Nation.

In the Creek Nation there are also some deeds yet to be delivered and some surplus lands yet to be sold, which it is hoped to close out very shortly. Under the Creek agreement, each citizen was entitled to the allotment of land at the appraised value of $1,040. The land actually subject to allotment fell short of this valuation to the amount, in all, of $6,913,291. The funds and resources of the Creek Nation fall far short of this sum. It will therefore be impossible to close out the affairs of the Creek Nation until additional legislation can be had.

In the Choctaw and Chickasaw Nations, the distribution of funds to equalize allotments has been continued during the fiscal year. Beside the necessity for completing this, there are still four matters to be disposed of. There are 1,142,071 acres of unallotted lands not reserved or segregated which are now being offered for sale at public auction. There are 1,333,324 acres of land reserved from allotment on account of timber. The timber on this land has been reestimated and appraised, and regulations for offering the land and timber for sale at auction are now almost completed. There are also 445,000 acres of segregated coal and asphalt lands in the Choctaw and Chickasaw Nations, considerable portions of which are under coal and asphalt leases. The nations are anxious to have these lands disposed of so that the proceeds may be divided. On this subject the Department has made reports to you and to Congress. Nothing can be done by the Department until appropriate legislation is enacted. There have also been reserved from allotment about 16 sections of matured timber. These lands have been repeatedly offered for sale, but no bid has ever been received equal to the appraised value. If the lands are to be disposed of, apparently either lower bids must be accepted or the Department must be authorized to sell the lands upon credit.

The establishment of district agents to assist in handling the affairs of restricted members of the Five Civilized Tribes has proven of the greatest benefit both to the Indians concerned and to the Department. The work of these agents has made it possible for the Department to perform its work both more efficiently and more promptly, and I believe that the questions affecting individual Indians are now being thoroughly well handled.

More than 20,000 suits brought to set aside conveyances of allotted land on the ground that the Indians were incompetent to convey are still pending, awaiting the decision of a case in the United States Supreme Court, which has been submitted and which it is expected will soon be decided. In the meanwhile, however, equitable settlements have been reached in a large number of such cases, and the work of settling is steadily progressing.

A great deal of work has been done, largely with the aid of the district agents, in protecting the rights of minor Indians who have suffered from negligent and, in some cases, dishonest guardians. Much land and large sums of money have already been recovered.

## PENSION OFFICE.

At the beginning of the fiscal year ended June 30, 1911, there were 921,083 pensioners on the roll. There were added thereto during the year 26,200, made up of original allowances, restorations, and renewals. There were dropped therefrom 55,185, occasioned by death, remarriage, minors attaining the age of 16 years, failure to claim for three years, and all other causes, making a net reduction in the roll of 28,985, and leaving the total number on the roll at the close of the year of all classes 892,098, of whom 570,050 were soldiers and sailors, 321,642 were widows and dependents, and 406 were Army nurses.

The unexpended balances of the appropriations at the close of the fiscal year covered into the Treasury were as follows:

| | |
|---|---|
| For pensions | $182,199.39 |
| For medical examinations | 43,234.67 |
| For salaries and clerk hire, pension agencies | 15,492.85 |
| For rent and contingent expenses | 10,027.98 |
| For inspection of agencies | 1,331.05 |
| For salaries, Bureau of Pensions | 16,430.04 |
| For salaries, per diem, and expenses of special examiners | 22,780.66 |
| Total | 291,496.64 |

The amount expended for pensions during the year was $157,325,160.35, a decrease as compared with the previous year of $2,648,895.73. The cost of administration in connection with the adjudication of claims and the payment of pensions was $2,517,127.06, a reduction in the running expenses of the Bureau and agencies in one year of $140,546.80. This is the smallest amount paid in any one year for such administration for 29 years.

The appropriations for the current expenses of the Bureau of Pensions and agencies for the fiscal year 1912 show a reduction of $629,650 as compared with similar appropriations for 1909.

There was disbursed for pensions from July 1, 1790, to June 30, 1865, $96,445,444.23. From July 1, 1865, to June 30, 1911, the total disbursements for pensions were $4,133,936,285.93. The expenses and cost of maintenance for the same period were $120,879,861.74, making a total of disbursements since July 1, 1865, of $4,254,816,147.67.

At the beginning of the year the number of applications pending of all kinds was 47,295. At the close of the year there were pending 36,793 applications, exclusive of a large number placed in the abandoned files. The total number of applications filed during the year was 120,814. There were admitted during the year 92,274 claims; rejected, 30,980; adjudicated where no benefits were derived other than those rejected, 1,065; making the total number of claims of all classes adjudicated 124,319.

Allowances of accrued pension were made in 20,618 cases, being issues for payment in cases of deceased pensioners from date of last payment to date of death.

There have been granted since 1861 by special acts 35,987 pensions, of which number 22,323 are now on the roll with an annual face value of $6,611,357. Only a part of this amount, however, is properly chargeable to special acts, as most of the beneficiaries had been previously pensioned under the general laws at lower rates. During the third session of the Sixty-first Congress 3,586 persons were included in special acts.

The largest number of pensioners on the roll at the close of any fiscal year was on June 30, 1902, when the total was 999,446. There has been a net decrease of more than 100,000 in the last six years, and the number is now less than at any time since 1892.

Since the passage of the act of March 3, 1899, providing for division of pensions of resident pensioners of the United States who shall desert their wives or minor childern, or who are inmates of National or State soldiers' and sailors' homes, 13,423 claims have been filed thereunder, 7,209 of which have been allowed and 5,987 rejected, leaving 227 pending.

Three bounty land warrants were issued during the year, granting 480 acres of land. The total number of such warrants issued to the close of the fiscal year 1911 is 598,685, granting 68,791,550 acres.

On June 30, 1911, there were also pending 1,427 claims for expenses of last sickness and burial of deceased pensioners. There were disposed of during the year 7,574 claims, of which number 5,808 were allowed, 1,166 disallowed, and 600 abandoned.

There were 59 new cases presented to the Department of Justice on account of offenses against the pension laws, and indictments found in 57 cases. There were 53 cases brought to trial during the year, in 51 of which convictions were secured. Only three of these cases were against persons who had rendered military or naval service. At the close of the year there were 109 cases pending in the hands of United States attorneys. Two civil suits were instituted; one was disposed of and a judgment for $538.54 obtained, and one dismissed by reason of a heavy fine being imposed upon the defendant in a criminal case. There was recovered $2,407.94.

As a matter of historical interest it is noted that the last pensioner of the Revolutionary War died during the past year. The last surviving pensioned soldier of that war died in 1869, and the last widow pensioner of that war died in 1906. The last surviving pensioned soldier of the War of 1812 died in 1905. There are now 279 widows of that war on the roll.

The law now requires each pensioner to present a voucher to the pension agent, executed after the pension has become due, before a check may be issued in payment thereof. This system is very expensive to the Government as well as to the pensioner. The Commissioner of Pensions, in response to a provision contained in the last appropriation act directing him to formulate a simplified plan for the payment of pensions, recommends that discretionary authority shall be granted whereby pensions may be paid without vouchers. The plan recommended provides for payment by check mailed to the last-known address of the payee. Postmasters are to be required to return the check for cancellation if the pensioner has died or remarried if a widow. The unpaid pension to the date of death of the pensioner will then be disposed of in accordance with the law, which provides specifically for the payment of accrued pension. The plan also provides that postmasters shall be required to report promptly to the proper office the death of any pensioner or the remarriage if a widow, in order that checks may not be issued in such cases. The check to be used will contain a provision to the effect that it is void if the payee shall have died or remarried if a widow prior to date of issue. It will be payable only when personally indorsed in ink by the payee, in the presence of two responsible witnesses, who shall certify to the identity of the payee with the pensioner named in the check and pension certificate. The plan further provides a penalty for forgery in the indorsement of the check, receiving payment of check upon a forged indorsement, or receiving payment of pension for any period subsequent to reenlistment, remarriage, or termination of period of dependence.

Under the plan proposed checks would be prepared and ready for mailing on the 4th of the payment month, many pensioners receiving their checks on that date. The pensioners will be saved the expense of the execution of pension vouchers and the delay often due to the return of faulty vouchers for correction. It is estimated that the cost to the pensioners in the execution of their vouchers is nearly $1,000,000 per annum.

The plan proposed will save to the Government the expense of printing, preparing, and mailing about 4,000,000 vouchers and the furnishing of 4,000,000 envelopes each year in which to return the vouchers for payment.

The Government will likewise be saved the expense of employing a large number of temporary clerks at the agencies during each quarterly payment.

The plan recommended by the commissioner shows that great care has been observed in working out the details to insure its successful operation. As it is shown to be along the line of economy and efficiency in the public service and will undoubtedly be greatly to the advantage of the pensioners, the same meets with my most hearty approval.

## APPEALS IN PENSION AND BOUNTY LAND CLAIMS.

The number of appeals and motions for reconsideration pending at the beginning of the fiscal year July 1, 1910, and those filed during the year, their disposition, and the number pending July 1, 1911, is shown by the following table:

| | Pending July 1, 1910. | Filed during the year. | Rein-stated. | Total. | Dis-posed of. | Pending July 1, 1911. |
|---|---|---|---|---|---|---|
| Original merit appeals | 233 | 3,211 | 1 | 3,445 | 2,915 | 530 |
| Fee appeals | 4 | 43 | .......... | 47 | 46 | 1 |
| Motion for reconsideration | .......... | 78 | .......... | 78 | 77 | 1 |
| Total | 237 | 3,332 | 1 | 3,570 | 3,038 | 532 |

In 186 cases the Pension Office was reversed, and in 118 cases the Commissioner of Pensions reported that upon reconsideration the adverse action taken by the Bureau was receded from and asked permission to allow appellants' contention. The Department, after considering such cases, decided that the action proposed by the Bureau was warranted under the law and the evidence, and the papers therein were returned to the Bureau for final action and favorable adjudication. There were also during the year returned to the Bureau for further action and report 118 cases for the reason that upon review it was found that additional and material evidence had been filed which had not been considered by the Bureau, or that a special examination or another medical examination was thought necessary, or for various reasons the claims had not been properly adjudicated. At the close of the year there were 12 of such cases pending, which are included in the total number of pending appeals as shown by the table.

Although there is a material increase in the number of appeals left pending and undisposed of at the end of the last fiscal year, and the total number finally disposed of by the board during the fiscal year ended June 30, 1910, largely exceeded the total number disposed of during the last fiscal year, this is fully accounted for by the reduction of the working force of the board and a comparison shows that the average number of cases disposed of per member during the last year was greater than during the preceding year.

The provisions of the legislative, executive, and judicial appropriation act, approved March 4, 1911, having abolished the Board of Pension Appeals and transferred the duties theretofore performed by it to the office of the Assistant Attorney General for the Department of the Interior, the present report shows the final work of the board and the termination of its labors.

The figures shown by the foregoing tabulated statements demonstrate that the rapid falling off in the number of pension cases presented to the Department on appeal which was anticipated when the legislation above referred to was enacted has not been realized, and the fact that there has been a steady increase during the past year in the number of cases left pending and undisposed of at the close of each month, and a gradual falling behind in the docket notwithstanding the individual output of work by the members and employees of the board has markedly increased, would suggest that this work can not be successfully accomplished with less than the present working force.

I would, therefore, recommend that the Board of Pension Appeals be reestablished at the earliest possible date with at least the same working force provided for said board by the appropriation act for the fiscal year ended June 30, 1911. Provision might be made, as heretofore, that any vacancies occurring on the board by death, resignation, or otherwise should not be filled, thereby anticipating the decrease in the number of appeals taken that may be expected in a few years.

## PATENT OFFICE.

During the fiscal year ended June 30, 1911, there were received 65,154 applications for mechanical patents, 1,315 applications for designs, 206 applications for reissues, 6,857 applications for trade-marks, 879 applications for labels, and 266 applications for prints. There were 34,428 patents granted, including reissues and designs, and 3,791 trade-marks, 576 labels, and 181 prints were registered. The number of patents that expired was 22,546. The number of allowed applications which were by operation of law forfeited for nonpayment of the final fees was 7,098. The total receipts of the office were $1,987,778.58; the total expenditures were $1,957,001.85; and the net surplus of receipts over expenditures was $30,776.73. The total net surplus for all years of receipts over expenditures of all kinds (including salaries of the force) is now $7,029,004.73. This surplus covered into the Treasury represents the net earnings of the Bureau, and it has all been paid by the inventors.

The commissioner calls attention to the great need for legislation providing for the elimination of one of the appeals within the Patent Office. The commissioner states that, under the present law, appeals are considered twice by the tribunals within the office, which is not only a duplication of work, thereby causing great delay in the prosecution of applications, but an additional and unnecessary burden of expense to inventors in the matter of appeals and attorneys' fees.

He also recommends legislation requiring the filing of photographic copies of drawings to accompany applications for patents for the purpose of more fully safeguarding the records of the office from unauthorized changes and reducing the chances of attempted fraud during the prosecution of the application.

I concur in the commissioner's recommendation for legislation to authorize him to issue certificates of correction in certain cases where mistakes have been made by the office or by the Public Printer; also for provision by law that applications shall be completed and prepared for examination within six months after filing of the application.

The commissioner urgently recommends that provision be made for more room for housing the United States Patent Office. The present structure is not fireproof and is filled with tons of inflammable material, comprising the secret archives of the office, which, if destroyed, would work untold damage to the commercial interests of the country. The District of Columbia fire department officials have pronounced the building unsafe as to fire, and the engineers of the War Department have said that the walls should be lightened of their load.

The commissioner suggests that a suitable building be rented for the Patent Office, to be used until the present building could be thoroughly remodeled, and if thought desirable when that is done the bureaus which are now in rented quarters, such as the Geological Survey, the Reclamation Service, and the Bureau of Mines, could be housed in the remodeled present building and a new building erected to accommodate the annually increasing force and volume of business of the Patent Office while that bureau was occupying temporary quarters. He urges that the Patent Office be given immediate and special relief and that part, at least, of the $7,000,000 in excess of the expenditures of the Patent Office be used to furnish larger and better quarters, with modern facilities for the force, which would then be in a position to accomplish the best possible results in the work for which the inventors pay the total cost.

## BUREAU OF EDUCATION.

We have no national system of education. The several States have their own systems, and it has been and is the policy of the Federal Government not to interfere in any way with their schools, public or private; but it has been just as clearly its policy to foster education in all the States, not only by appropriations of money and lands, but in other ways not contrary to the accepted theory of the relation of the Federal and State Governments. For this purpose nearly half a century ago the Bureau of Education was established and attached to the Department of the Interior for the purpose of "collecting such statistics and facts as shall show the condition and progress of education in the several States and Territories and of diffusing such information respecting the organization and management of schools and school systems and methods of teaching as shall aid the people of the United States in the establishment and maintenance of efficient school systems, and otherwise promote the cause of education throughout the country." From year to year this Bureau has published statistical reports and many valuable studies of various problems of education, by the help of which school officers and teachers in each of the States have been enabled to know the progress of education in other States and throughout the world, and legislatures have been able to consider educational measures in the light of the experience of other States and the world at large.

Much more than half the children in the United States live under rural conditions in small towns, villages, and open country. All their education must be had in the rural schools. While the schools in the great cities are constantly the subject of study, there is no means of studying the comparative methods and development of rural schools in different communities except through the Bureau of Education. I believe the work of the Bureau should, therefore, be especially directed to this end, and that it should be afforded men and means sufficient to enable it to make such study of the needs of rural schools as will be a help to all parts of the country. The problems of the rural school are admitted to be the most difficult of all school problems, but this Bureau has in the past been able to give very little direct help toward this solution. There is great need in the Bureau for a comparatively large group of competent men and women giving their entire time and energies to these problems, with freedom, under the direction of the commissioner, to study them directly or indirectly wherever they can be studied to best advantage, prepare bulletins on the various phases of these problems for the general information of the people, to cooperate with national, State, and local committees constituted for their study by governments and various organizations and societies, and to go to any part of the country to give direct and specific assistance whenever needed. Such a division in the Bureau might in a very few years add much to the effectiveness of all country schools.

Over all the world the demand for industrial or vocational education is growing. In this country teachers and laymen in urban and rural communities alike are demanding that the schools shall do something to prepare the masses of boys and girls for effective service in some industrial occupation, fit them to make a living, and to contribute their part to the Commonwealth. How this shall be done and in what kind of schools is still uncertain. Experiments of many kinds have been tried in many places. Much money has been spent on these experiments and much more will be spent more or less wisely.

I believe the Bureau of Education can render very valuable service in this connection, and for that purpose it should have a group of competent specialists and assistants to study the various phases of the problem; bring together and digest the work and reports of societies, committees, and commissions; help toward the formulation of fundamental principles; and assist State, city, and county boards of supervisors in working out their practical application.

Twenty million or more children and young people in the United States spend a good portion of their time in school every year. The indoor sedentary life required by the work and discipline of the school is more or less unnatural for childhood and youth, and unless the conditions under which the school work is done are intelligently controlled there is constant danger that the health of the pupils may be injured, their vitality lowered, and their happiness and their value as citizens diminished. The country is fundamentally concerned in the health of its future citizens and should give to it no less attention than it gives to its live stock. To this end the Division of School Hygiene and Sanitation recently established in the Bureau of Education should be strengthened by the addition of a sufficient number of competent assistants and clerks to enable it to do its work effectively, studying principles of school sanitation, working out plans for their application, awakening interest in the subject among school officers, teachers, and patrons throughout the country, and assisting them in the care and health of the children in the schools.

The increase of the interest throughout the country in secondary and higher education has been greater even than in elementary education. Appropriations for colleges, universities, technical schools, and normal schools for the training of teachers have increased nearly 200 per cent in the past decade, and the increase in appropriations for the agricultural and mechanical colleges has been still larger. With this increase in interest and expenditures has come an increase in demands on the Division of Higher Education in this Bureau, and it should be strengthened immediately by the addition of specialists in normal-school education for the training of teachers. There is particular need for a specialist in agricultural education, who may give his time to the agricultural and mechanical colleges for negroes in the Southern States and help them to a better use of the funds they receive from the Government. Because of lack of some such intelligent supervision and help many of these schools are failing to accomplish the full purpose for which the Federal funds are appropriated.

Because of the peculiar nature of the work which this Bureau has to do it is especially important that the Commissioner of Education and the heads of the various divisions should be enabled to visit schools in all parts of the country, attend meetings of educational associations, confer with school officers and teachers, and make the Bureau more directly useful. For this purpose there should be liberal appropriations for traveling expenses, and an assistant commissioner should be provided to carry on the routine duties of the office during the absences of the commissioner.

The Bureau should be able to gather full and accurate statistics in regard to education and to publish them promptly. The recent increase in the number, size, and kinds of schools makes this a very difficult task and there is need of radical revision in the method of doing it. This can be done, it is believed, with little additional cost if the recommended enlargements in the Bureau are made.

The Bureau of Education now has one of the most valuable and complete libraries on education in the world, and it should be made more serviceable not only to the Bureau itself but also to students of education everywhere. To students and investigators in all phases of education it should become a chief source of information, and all of its material should be made easily accessible to them. For this purpose there should be employed a man well versed in the theory and practice of education, whose services would be at the disposal of such students and who might assist them in their studies and investigations.

During the year ended June 30, 1911, there were maintained 81 public schools for natives of Alaska, with an enrollment of 3,810 and an average daily attendance of 1,692. This average attendance is much lower than it should be. There is need of a law requiring the children of natives of Alaska between the ages of 6 and 15 to attend school at all times when the families of such children are in a village having a school. The appropriation for their education should be increased from $200,000 to $248,000, so that more attention may be given to instruction in sanitation and industries.

The experience of the Bureau of Education in endeavoring through its employees to furnish medical relief to the natives of Alaska demonstrated the desirability of authoritative study of the prevalence of disease among the natives of Alaska and of the means for its prevention. During the summer of 1911 Dr. Milton H. Foster, detailed from the Public Health and Marine-Hospital Service, made a thorough investigation of the sanitary conditions among the natives of southern Alaska. As the result of his investigations, Dr. Foster recommended the following measures, which require action on the part of Congress: (1) The establishment of a sanitarium for cases of pulmonary tuberculosis requiring hospital treatment; (2) the establishment of a home for destitute blind and crippled natives; (3) authority for the Surgeon General of the United States Public Health and Marine-Hospital Service to appoint one of the officers of that service to act as commissioner of public health for Alaska.

The reindeer in Alaska are being gradually turned over to the natives and they now own about 55 per cent of the total number, while the Government now owns only 14 per cent. Of the 42 herds, 36 are cared for entirely by natives, whose net income therefrom during the year 1909–10 was $24,656.09. During the past year 40 reindeer were delivered to the Department of Commerce and Labor for use in stocking St. Paul and St. George Islands in Bering Sea.

## TERRITORIES.

For the purpose of centralizing information regarding the Territories, and, in so far as the law permits, to place their administration under the Department of the Interior, an order was issued by the President May 11, 1907, and subsequently amended to read as follows:

> It is hereby ordered that on and after May 1, 1909, all official communications or reports from and to executive officers of the Territories and territorial possessions of the United States, viz, Arizona, Hawaii, New Mexico, Porto Rico, Alaska, Samoa, and Guam, and all official communications or reports relating to territorial matters from and to all executive officers of the United States stationed in such Territories and territorial possessions shall be transmitted directly to the heads of the departments of the Government as provided by law, and in all cases where the acts of Congress do not specifically designate the department to which reports shall be transmitted the same shall be forwarded to the Secretary of the Interior in such manner and under such regulations as he may prescribe.

By Executive order dated July 15, 1909, Porto Rico was transferred to the Insular Bureau of the War Department.

## ALASKA.

Conditions in Alaska call for immediate action by Congress. Its proper administration and development can not be accomplished under existing laws. These laws neither promote development nor protect the public interest. After a careful examination of official reports and other publications, and a personal visit to the Territory during the past summer, I had occasion to present the opinions thus formed before the American Mining Congress at Chicago on September 27, 1911. The general policy outlined in that address had been discussed with you and you have since given public approval to its specific recommendations. With some modifications and with a map of Alaska indicating its present mineral development this address has been reprinted as Bulletin 36 of the Bureau of Mines and has received such general publicity that I do not deem it necessary to restate in detail the views therein expressed. It is available for all those who are interested in its suggestions. I do wish, however, to urge with great earnestness the importance of immediate relief for Alaska in the following particulars:

First. The construction by the Federal Government of a central trunk-line railroad from tidewater to the Tanana and the Yukon.

Second. The passage of a liberal but carefully guarded leasing law for the development of its mineral resources, and especially of its coal lands.

Third. The reservation of a sufficient amount of these coal lands to provide for the future needs of the Navy, and the mining of this coal by the Government for this purpose.

Fourth. More liberal appropriations for aids to navigation, such as lights and buoys.

Fifth. More liberal appropriations for the construction of roads and trails.

Sixth. The adoption of a form of territorial government better adapted to its remote situation and peculiar local conditions.

In the address to which reference has been made the advantages of and the justification for a Government railroad in Alaska were fully discussed, and the opinion was expressed that the Government should take over and complete the construction of the so-called Alaska Central or Alaska Northern Railroad, leading from Seward, on Resurrection Bay, through the Matanuska coal field to the Tanana and the Yukon. Since then the official representatives of the present owners of this railroad have definitely stated their willingness to turn it over to the Federal Government at a fair valuation to be appropriately determined. The Department of Agriculture has also furnished a statement of the results of its experimental work at Rampart and at Fairbanks, showing the agricultural probabilities of these northerly portions of the Yukon and the Tanana Valleys. The letter containing this statement is reprinted as an exhibit to this report. The following quotation conservatively states the general conclusion reached:

> As a result of 10 years' active work this Department believes in the possibility of developing an agriculture for Alaska that will be comparable with that of northern Europe, where conditions are somewhat similar, such as in parts of Norway, Sweden, Finland, and Russia. It is believed that agriculture will supplement any other industry that may be developed in Alaska, and it is possible that ultimately oats and barley can be grown in sufficient quantity to supply not only local demands but a surplus for exportation. It is probable that stock raising can be made a success and dairying become profitable, as the period of winter feeding and protection is not much, if any, longer than is now required in many other regions where these industries are carried on.

The Secretary of the Navy states that there should be reserved in Alaska for the uses of the Navy for the next 50 years sufficient high-grade coal to supply an average of 400,000 tons a year. There are portions of both the Bering River and Matanuska fields from which the Geological Survey believes the high-grade coal needed for Navy use can be obtained. It is estimated that not less than 2,500 acres of this land should be reserved for this purpose, to be carefully selected after systematic prospecting and drilling.

Careful consideration of the provisions of an appropriate leasing law for the coal lands of Alaska is being continued through the Director of the Bureau of Mines, who is receiving the cordial and helpful cooperation of men of wide practical experience in the business of mining coal, with the view of suggesting such changes in or substitutes for bills on this subject which are now pending in Congress as may be found desirable. In this connection I invite attention to the following paragraph from Bulletin 36 of the Bureau of Mines:

> The statutes of Colorado, Montana, and Idaho provide for leasing State lands containing, stone, coal, coal oil, gas, or other mineral. Colorado and Montana require a minimum royalty of 10 cents a ton for coal mined on such land. Montana prohibits the sale of its coal lands but authorizes the lease of the surface for agricultural or grazing purposes. It also requires the locator of a mining claim for gold, silver, and other metals, at the expiration of one year from the date of the location, either to purchase the claim at $10 per acre or take a lease thereof at such price and upon such terms as may be agreed upon between him and the State Board of Land Commissioners. Idaho also authorizes leases of State land containing precious metals. Minnesota authorizes leases of State land containing iron ore. North Dakota provides for the leasing of coal lands at a royalty of 10 cents per ton. Oregon and Washington provide for leasing State lands containing gold, silver, lead, cinnabar, or other valuable minerals. Wyoming authorizes the State Land Board to lease on a royalty basis State or school lands supposed to contain coal, oil, or minerals, the royalty not to exceed 10 per cent of the gross output of mineral or oil, and not exceed 10 cents per ton for coal. Some of the States above noted limit the leases to five years with provision for renewal, some to 50 years, and some to a period to be fixed in the discretion of the State land officials.

The whole subject of the encouragement and regulation of ocean transportation between Alaska and the rest of the United States should be given careful consideration with a view to the prompt enactment of needed legislation and the appropriation of the necessary money. All doubt as to the jurisdiction of the Interstate Commerce Commission over this traffic, as well as over the railroads of Alaska, should be removed and the necessary steps should be taken to ensure adequate terminal facilities and the prevention of discrimination in their use. I call attention especially to the following quotation from the annual report of the governor of Alaska:

> Although more aids to navigation have been installed on the Alaska coast in the last few months than in the whole history of the Territory heretofore, the number of these aids, relatively to the great expanse of the coast line, is still woefully small. Since April, 1910, there have been installed 41 lights, 1 fog signal, and 18 buoys. The first number given, however, includes 4 oil lights which were converted from oil burners to acetylene gas burners. The adaptation of the acetylene light in recent years to the purpose of lighting waterways has proved to be a great boon and has revolutionized the estimates of cost for aids to navigation in Alaska. In many situations among the tortuous channels of the inland passages on the Alaska coast an acetylene lens lantern, which is inexpensive to build and to maintain, serves a better purpose than a costly lighthouse, requiring the constant services of resident keepers. No very large appropriation of money has been made for aids to navigation in Alaska, but the development of the acetylene apparatus has made it possible to accomplish a great deal in the last year and a half.
>
> There is a crying need, however, for several high-order lights to mark dangerous points where minor lights will not serve the purpose, and where it is necessary to have

fog signals as well as lights * * *. These lights will be expensive, but the lack of proper aids at these and many other points in Alaska has caused the wreck of many passenger and freight steamships. Thirteen steamers of large tonnage, all of them carrying passengers, have been wrecked on the routes between Puget Sound and Alaska in the last three years and a half. Seven have been wrecked in the first nine months of 1911. The establishment of proper aids to navigation is a matter of as large economic importance, probably, as any other project for the development of Alaska. It is not only imperative that the lives of thousands of passengers be protected by this means, but that valuable property be conserved; and, by making navigation less hazardous, the rates of marine insurance, and hence of transportation and cost of supplies, reduced. It is probable that the sum of $400,000 would defray the cost of every remaining lighthouse project in Alaska that has thus far been examined and approved by the Lighthouse Establishment. It is earnestly urged that appropriations at least four times as large as those made for the current year be authorized at the coming session of Congress.

To demonstrate the imperative need of additional roads and trails in Alaska, it is only necessary to call attention to the fact that, as reported in 1910, in a territory as large as one-fifth of the main body of the United States there had been constructed since the organization of the board of road commissioners for Alaska a total of only 759 miles of wagon roads, 507 miles of sled roads suitable for 2-horse sleds, 661 miles suitable for single horse or dog sleds, 85 miles of trail staked permanently, and approximately 1,170 miles of trails temporarily staked. The maintenance cost of even this small system makes serious inroads on the total funds available for the construction of roads and trails. The subject is one calling for special consideration in connection with any modification of the territorial government. If Alaska is to be developed, adequate provision must be made for these primary means of transportation. I believe that Federal aid should be continued and increased and indeed that the Federal Government should make liberal appropriations in addition to the revenues which can be derived from the Territory itself. The revenues derived from the leasing of its coal and other lands should be devoted to the development of the Territory after the necessary expenses of administration have been paid.

The fact that the Federal Government has heretofore made direct appropriation for the benefit of the Territory and that increased appropriations are needed constitutes one of the chief arguments against the extension of the principle of territorial independence and territorial responsibility to Alaska. Taken in consideration with the comparatively small and widely scattered population and the inadequate means for transportation and communication, it would seem to demonstrate that a commission form of government would best meet the existing situation. Such a commission could consist of appointed representatives of the Federal Government and locally elected representatives of the Territory itself. To it could be transferred under appropriate limitations the authority to make territorial laws and regulations such as are now sadly needed. Among these needs are some of the fundamental requisites of modern civilized society, such as the regulation of the public health, sanitation, and quarantine; the registration of marriages, births, and deaths; poor relief, compulsory school attendance; supervision of banking institutions, etc. The distance of the Territory from Washington and the constant demands of other affairs upon Congress make it practically certain that matters of this character will receive proper attention only from a local legislative body. The improvement of its transportation facilities, the development of its natural resources, and the increase of its population—all of which seem certain to follow the enactment of remedial legislation—will enable the Territory to furnish the revenues needed for its local government, and will then entitle it to the same measure of territorial independence which upon the same basis has been given to other territories.

The annual report of the governor gives an account of the progress of the Territory during the year. The population has remained practically stationary and is now slightly less than 65,000, about equally divided between whites and natives. The improvement of the natives has not been as rapid as could be desired, chiefly because they are exposed to the temptations of intoxicating liquor. The great extent to which municipal expenses are paid from funds arising from liquor licenses has added to the difficulties of restricting this traffic and illustrates the unsatisfactory manner in which the local government is now carried on. The assessment of property for taxation is restricted to the incorporated towns. Several of these made no assessment of taxable property and levied no taxes during the year. One or two have never done so. However, action taken by the governor during the year has resulted in holding 20 white "whisky peddlers" for the action of the grand jury under the law making the selling or giving of liquor to natives a felony. The appropriation of $12,000 for the enforcement of this law should be renewed, as it is beyond question that the sale of liquor to the Alaskan Indians, if continued, can not fail to destroy the race. From 3,500 to 4,000 natives have received substantial benefit from the action of the Government in 1892 in introducing reindeer, which now number about 35,000.

The Territory entirely lacks any adequate laws for the protection of public health. There is no provision for establishing quarantine to prevent the introduction or spread of contagious diseases except in the incorporated towns. In like manner there is no law to enforce any of the ordinary rules of sanitation. The result is disastrous to the natives and also a menace to the white population, chiefly on account of the communication to it of diseases prevalent among the natives. There is no law in the Territory for the registration of marriages, births, or deaths. Such records are important to the public and to the protection of property rights, especially of widows and orphans. Some general law should be passed upon the subject without waiting for any change in the form of territorial government.

The Government expends about $240,000 annually for education in Alaska, and in addition the incorporated towns expend for schools a considerable sum. The public schools outside of the incorporated towns have been administered by the governor's office more efficiently than hitherto. Better methods of accounting have been introduced and manual training departments have been established in some of the larger schools. The statutory limit of $1,000 for the construction of a school building is reported to be insufficient to cover the cost. The suggestion is made that the maximum should be raised to $2,500, so that buildings may be constructed at a cost varying from this maximum to $1,200, which is the smallest amount for which a suitable building can be constructed in any of the towns. To make the system effective the law should compel attendance. This is especially necessary for the native children, for whom there are about 80 schools, administered by the Bureau of Education through a general superintendent and four district superintendents in Alaska.

Alaska's greatest resources are her minerals, and in the development of these the precious metals still hold the predominant place. The shipments of domestic gold and silver to the States during the last fiscal year amounted to $15,171,008, a sum greater than the value of the shipments of other commodities combined, and but slightly less than the importation of merchandise into Alaska from the States. The statistics of commerce have shown an increase in the value of the shipments other than gold and silver from Alaska to the States. Canned salmon and copper ore were the items which increased most. The increase in the copper shipments was largely in the last three months of the fiscal year, because of the completion of the Copper River Railroad and a larger increase is to be expected. The coal used in Alaska for all purposes during the year was 116,000 tons. The prices on the coast have ranged from $10 a ton at Juneau to $21.30 at Nome. The inadequate laws, the pending contests on private entries, and the general withdrawal of the coal lands have combined to prevent the development of Alaskan coal. The coal used has been imported and less than one-third of it has come from the United States. In the interior, wood is the fuel in general use for all purposes, while on the coast oil is supplanting coal, and the railroads and steamship lines of Alaska and the interior Pacific coast are being equipped for this fuel, the supply for which is drawn from the California oil fields. The fishing industry stands second to mining in its productiveness. It employs upward to 15,000 persons, and $20,000,000 has been invested. The finished product had an export value of over $10,000,000, which is an increase of over

$2,000,000. The recent season was the most prosperous ever experienced, due chiefly to an increase in the prices of the product, although it is probable that the pack of canned salmon was the largest ever produced. The halibut fishery quadrupled its output in 1910 and more than quadrupled the price received for it, which that year was over $800,000. The statistics for the season of 1911 when completed are expected to show a still further increase.

Many changes in the laws and regulations are necessary for the encouragement and protection of the fisheries. The effective cooperation of Federal and local authorities for this purpose could be brought about by such a commission as has been suggested. The governor's report, however, calls attention to some changes which should be made immediately, such as prohibiting the taking of herring for the manufacture of fertilizer and oil; the regulation of the number of salmon canneries; the readjustment of taxes; the maintenance of public fish hatcheries, and the discontinuance of the system under which the maintenance of private hatcheries entitles the canning establishments to tax rebates. The governor also calls attention to the need of additional legislation for the better protection of the fur-bearing animals.

During the year $548,447 worth of lumber was shipped from the United States to Alaska, being about the same amount that has been shipped annually for the past five years. The record of timber cut from the national forests in Alaska during the past year shows over 28,000,000 board feet, for which approximately $30,000 was paid. Timber outside of the national forests is used for domestic and other local purposes and the regulations governing its use are now undergoing revision with a view to making this timber more readily available.

The report of the governor contains many other suggestions and discusses conditions in detail. It should receive careful consideration by Congress.

## ARIZONA AND NEW MEXICO.

The time draws near when the governmental affairs of Arizona and New Mexico will have no place in the annual report of the Secretary of the Interior. Under the enabling act of Congress approved June 20, 1910 (36 Stat., 57), a convention was elected in each Territory and framed a State constitution, which was approved by a vote of the people in January, 1911. On August 21, 1911, the President approved a joint resolution (37 Stat., 39) authorizing him to issue his proclamation admitting Arizona and New Mexico into the Union on the following conditions:

That there should be submitted to and adopted by the voters of Arizona a substitute for Article VIII of the pending constitution excepting the judiciary from the operation of recall by popular vote.

In that event the Territory will be admitted to statehood upon the completion of the necessary formalities.

That there should be submitted to the electors of New Mexico for adoption or rejection a substitute for Article XIX of the pending constitution providing an easier method of amendment in the future. The governor reports that this substitute was adopted at an election held November 7, when State officers and Representatives in Congress were also voted for. The issuance of the President's proclamation awaits the due certification of the results of this election.

Both Territories have developed sufficiently to fully justify their admission into the Union. Arizona's population is estimated at 225,000, an increase of approximately 10 per cent since the census of 1910 was taken. That of New Mexico was 327,301 in 1910, and is now estimated at 340,000. The increase of population is especially notable in the irrigated valleys, and therefore indicates not only present but permanent stability and prosperity. The annual revenues of each Territory slightly exceed $1,000,000. The annual expenditures of Arizona are slightly in excess of, and those of New Mexico slightly less than, said sum. The assessed valuation of the taxable property of Arizona is $98,032,708.64 and that of New Mexico $60,048,880.75, an increase of $11,906,482.29 and $1,735,754.57, respectively, over 1910. The tax rate for each Territory is 10 mills, and the debt of each slightly less than $1,000,000.

## HAWAII.

The jurisdiction of the Department of the Interior over Hawaii is exceedingly limited. While the governor and some other territorial officials are appointed by the President, the islands are largely self-governing, under authority and limitations contained in the acts of Congress. Under the joint resolution of July 7, 1898, providing for annexing the Hawaiian Islands to the United States, Congress provided that the existing laws of the United States relative to the public lands should not apply to such lands in the Hawaiian Islands, but that special laws for their management and disposition should be enacted by Congress. Certain changes were made by intermediate legislation, and in 1910 Congress, by the act of May 27 of that year, made many important changes in the laws relating to public lands in the Territory. It has been held by this Department that there is no appellate jurisdiction in the Secretary of the Interior respecting decisions of the territorial officers in regard to the public lands, and this Department has never been called upon to administer those laws. It has occasionally been asked for advice by the territorial authorities, and on one occasion an appeal was attempted but dismissed.

The annual report of the governor of Hawaii points out that imports and exports aggregated $69,451,163, which, although less by $2,173,796 than for the preceding year, was greater by $7,226,984 than the largest amount before that; they have increased 125 per cent in the 11 years of territorial government. The imports were $27,512,580, an increase of $2,374,333, and the exports $41,938,583, a decrease of $4,547,829. About 90.5 per cent of the trade was with the mainland of the United States, the imports from which have practically doubled within seven years. The inward tonnage was 1,343,876, an increase of 35,075, and the outward tonnage slightly greater. The tonnage has increased 40 per cent during territorial government. Nearly 95 per cent in value of the freight was carried in American bottoms. The customs receipts were $1,654,761.34, an increase of $79,442.19, and larger than for any preceding year; the total thus paid into the Federal Treasury since the organization of territorial government is $14,913,460.86. The internal-revenue receipts were $218,739.14, an increase of $19,606.63, and larger than for any preceding year; they have aggregated $956,204.32 during the period of territorial government.

The current receipts of the territorial government were $3,482,560.84, a decrease of $158,684.51. The disbursements, including payments to counties and transfers to special funds, were $3,584,517.61, an increase of $320,153.41. The net cash balances in all revenue accounts aggregated $1,101,051.72 at the close of the year, an increase of $287,449.60. The counties collected $267,275.56 for themselves in addition to $1,184,564.11 paid to them by the Territory. Thus the total public revenues, territorial and county, aggregated $3,749,836.40, of which $2,297,996.73 went to the Territory and $1,451,839.67 to the counties.

Bonds bearing 4 per cent interest were paid to the amount of $75,000, leaving at the close of the year a total bonded debt of $4,004,000, or 2.59 per cent of the assessed value of property. Such assessed value was $154,584,032, an increase of $4,315,565. There are no county bonds.

Bank deposits at the close of the year were $15,310,263.51, an increase of $1,985,957.97; 5 new banks were established. The capitalization of domestic corporations was $156,873,028, an increase of $4,837,503; 51 new corporations were created and 7 old ones dissolved.

The population of the Territory is 191,909, an increase of 37,908, or 24.62 per cent since 1900; of Honolulu, 52,183, an increase of 12,877, or 32.76 per cent. The population by races is as follows: Hawaiians, 26,041, a decrease of 3,746; part-Hawaiians, 12,506, an increase of 4,658 (of these 8,772 are Caucasian-Hawaiians and 3,734 Asiatic-Hawaiians); Portuguese, 22,303, an increase of 6,628; Spanish, 1,990, and Porto Ricans, 4,890 (both new); other Caucasians, 14,867, an increase of 4,290; Chinese, 21,674, a decrease of 4,088; Japanese, 79,674, an increase of 18,559; and all others (including 4,533 Koreans, 158 blacks, 537 mulattoes, and 2,736 others), 7,964, an increase of 4,727.

## NATIONAL PARKS AND RESERVATIONS.

The policy of setting aside tracts of land in various sections of the United States as pleasure grounds for the people was inaugurated by Congress by the act of March 1, 1872, in establishing the Yellowstone National Park in Wyoming, and thereafter from time to time other lands in various sections of the country were set aside for such purpose and as a practical means of preserving the wonders of nature therein from desecration. These reservations now aggregate 12 in number, embracing over 4,500,000 acres, to which should be added the Grand Canyon of the Colorado River, for the creation of which as a national park recommendations have heretofore been submitted.

The areas of these parks, with date of establishment of each, are as follows:

| Name. | Date of establishment. | Acres. |
|---|---|---|
| Yellowstone, in Wyoming, Montana, and Idaho | Mar. 1, 1872 | 2,142,720.00 |
| Yosemite, in California | Oct. 1, 1890 | 719,622.00 |
| Sequoia, in California | Sept. 25, 1890 | 161,597.00 |
| General Grant, in California | Oct. 1, 1890 | 2,536.00 |
| Mount Rainier, in Washington | Mar. 2, 1899 | 207,360.00 |
| Crater Lake, in Oregon | May 22, 1902 | 159,360.00 |
| Wind Cave, in South Dakota | Jan. 9, 1903 | 10,522.00 |
| Sullys Hill, in North Dakota | Apr. 27, 1904 | 780.00 |
| Platt, in Oklahoma | July 1, 1902<br>Apr. 21, 1904 | 848.22 |
| Mesa Verde, in Colorado | June 29, 1906 | 42,376.00 |
| Five-mile strip for protection of ruins | do | 175,360.00 |
| Hot Springs Reservation, in Arkansas | June 16, 1880 | 911.63 |
| Glacier, in Montana | May 11, 1910 | 981,681.00 |
| Total |  | 4,606,153.85 |

Public interest in these national reservations, not only in this country, but abroad, is constantly increasing, as is indicated by the number of visitors thereto. During the past year the total number of visitors to all these parks aggregated approximately 224,000, as against 198,506 in 1910. There is every reason to believe that travel thereto will be greatly augmented in the future, especially during 1915, when the Panama-Pacific International Exposition will be held in San Francisco, and the various transcontinental roads will doubtless provide a transportation rate calculated to attract visitors to the various reservations as well as to the exposition.

For the purpose of bringing together the superintendents of the various parks, and discussing the many difficult problems presented in the administration of the affairs of each, I presided at a conference held under my direction in the Yellowstone National Park in September, 1911, at which there were in attendance the Assistant Secretary, the chief clerk, and other representatives of this Department, representatives of the Departments of Agriculture and War, the various transcontinental railroads, and of concessionaires in the several reservations. Many phases of park administration were discussed, including hotel accommodations, public transportation, construction of roads, trails, and bridges, fire protection, forestry, protection of game, and the enforcement of the park regulations generally. This conference should result in more effective administration than it has heretofore been practicable to secure. The consensus of opinion, however, at the conference was that development of the national reservations should proceed along more liberal lines than has heretofore obtained, and that the supervision of the activities of the various parks should be centralized in a bureau especially charged with such work.

There are hereto appended tables giving the location, date of establishment, area, private holdings, if any, the number of visitors, and the special characteristics of the various national parks under the supervision of the Secretary of the Interior; the appropriations made by Congress for the protection and improvements thereof during 1911 and for five years prior thereto, as well as the revenues derived from leases, privileges, and concessions in said reservations received during the said period.

## NATIONAL MONUMENTS AND PRESERVATION OF AMERICAN ANTIQUITIES.

By an act approved June 8, 1906, entitled "An act for the preservation of American antiquities," the President of the United States is authorized, "in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments." Under such authority the President has created the following monuments:

*National monuments administered by Interior Department.*

| Name. | State. | Date. | Area. |
|---|---|---|---|
| | | | *Acres.* |
| Devils Tower | Wyoming | Sept. 24, 1906 | 1,152 |
| Montezuma Castle | Arizona | Dec. 8, 1906 | 160 |
| El Morro | New Mexico | do | 160 |
| Chaco Canyon | do | Mar. 11, 1907 | 20,629 |
| Muir Woods[1] | California | Jan. 9, 1908 | 295 |
| Pinnacles | do | Jan. 16, 1908 | [2] 2,080 |
| Tumacacori | Arizona | Sept. 15, 1908 | 10 |
| Navajo[3] | do | Mar. 20, 1909 | [4] 600 |
| Mukuntuweap | Utah | July 31, 1909 | [2] 15,840 |
| Shoshone Cavern | Wyoming | Sept. 21, 1909 | 210 |
| Natural Bridges[5] | Utah | Sept. 25, 1909 | [2] 2,740 |
| Gran Quivira | New Mexico | Nov. 1, 1909 | [2] 160 |
| Sitka | Alaska | Mar. 23, 1910 | [2] 57 |
| Rainbow Bridge[3] | Utah | May 30, 1910 | 160 |
| Lewis and Clark Cavern | Montana | May 16, 1911 | 160 |
| Colorado | Colorado | May 24, 1911 | 13,883 |
| Petrified Forest | Arizona | July 31, 1911 | 25,625 |

[1] Donated to the United States.

[2] Estimated area.

[3] Within an Indian reservation.

[4] Based on 15 known ruins with a reserved area of 40 acres surrounding each ruin. Exterior limits of tract specified in proclamation contain 918,310 acres.

[5] Originally set aside by proclamation of April 16, 1908, and contained only 120 acres.

By proclamation of May 24, 1911, a new national monument under the Department has been created, designated as the Colorado National Monument, Colorado. The lands embraced within this reservation are in part identical with those included within the boundaries of the Monument National Park proposed in H. R. 22549, introduced in the Sixty-first Congress, which failed of passage. The monument, however, contains nearly 5,000 acres of land less than the area proposed to be segregated by the national-park bill.

In the case of the Lewis and Clark Cavern Monument, Montana, set aside by proclamation of May 11, 1908, a new proclamation was issued on May 16, 1911, more specifically defining the boundaries thereof.

The Pinnacles National Monument, California, was set aside by a proclamation dated January 16, 1908, at which time it was under the supervision of the Secretary of Agriculture, being within a national forest. By proclamation dated December 12, 1910, the lands on which this monument is located were eliminated from the national forest, and since that date it has been under supervision of the Secretary of the Interior.

The Petrified Forest National Monument, Arizona, was originally set aside on December 8, 1906, with an area of 60,776 acres. The definite location of the principal deposits of silicified wood was not known, the intention being to reduce the area after the lands could be examined and the location of the valuable deposits determined. During the year Dr. George P. Merrill, head curator of geology, National Museum, visited the reservation at the instance of this Department, and submitted a report thereon recommending the reduction of the metes and bounds of the reservation and suggesting the segregation of such portions thereof as are desirable for the use of collectors having permits under the act of June 8, 1908, to take specimens of silicified wood from the reservation. This report met with the approval of the Department, and accordingly, on July 31, 1911, a new proclamation was issued reducing the area of the Petrified Forest National Monument to 25,625 acres.

The supervision of these various monuments has, in the absence of any specific appropriation for their protection and improvements, necessarily been intrusted to the field officers of the Department having charge of the territory in which the several monuments are located. This supervision in many instances is necessarily limited, and considerable difficulty has been experienced in protecting the monuments from vandalism, unauthorized exploration, and spoliation. It is recommended that adequate appropriation be made by Congress for the protection and improvement of these reservations. Only such monuments as in the judgment of the Secretary of the Interior are subject to depredations by vandals and unauthorized collections on the part of the public should be provided with a custodian or superintendent.

The following national monuments are not administered by the Secretary of the Interior. Those that should be continued should be placed under the proposed Bureau of National Parks.

*National monuments administered by Department of Agriculture.*

| Name. | State. | Date. | Area. |
|---|---|---|---|
| | | | *Acres.* |
| Cinder Cone | California | May 6, 1907 | [1] 5,120 |
| Lassen Peak | do | do | [1] 1,280 |
| Gila Cliff Dwellings | New Mexico | Nov. 16, 1907 | 160 |
| Tonto | Arizona | Dec. 19, 1907 | [1] 640 |
| Grand Canyon | do | Jan. 11, 1908 | [1] 806,400 |
| Jewel Cave | South Dakota | Feb. 7, 1908 | [1] 1,280 |
| Wheeler | Colorado | Dec. 17, 1908 | 300 |
| Mount Olympus | Washington | Mar. 2, 1909 | [1] 608,640 |
| Oregon Caves | Oregon | July 12, 1909 | 480 |
| Devil's Postpile | California | July 6, 1911 | 800 |

[1] Estimated area.

*National monument administered by War Department*

| Name. | State. | Date. | Area. |
|---|---|---|---|
| | | | *Acres.* |
| Big Hole Battlefield | Montana | June 23, 1910[1] | 5 |

[1] Set aside by Executive order.

## ELEEMOSYNARY INSTITUTIONS.

### GOVERNMENT HOSPITAL FOR THE INSANE.

On June 30, 1911, there remained in the hospital 2,862 patients, as against 2,916 remaining on June 30, 1910, a decrease of 54 from the previous year. During the year there were admitted 623 patients, a decrease of 27 from the previous year. The number of admissions added to the number remaining on June 30, 1910, makes a total of 3,539 patients under treatment during the last fiscal year, being an increase of 37 over the previous year. The daily average population for the year was 2,884, as against 2,872.91 for the previous year, thus showing an increase of 11.09. Of the total number of patients admitted, 401 were from civil life, 215 from Army and Navy, and 7 from the Public Health and Marine-Hospital Service.

In prior annual reports attention has been called to the fact that existing laws governing the commitment of the various classes of insane persons to the hospital do not adequately meet the present conditions and need revision, and to the necessity for outlining some definite policy with reference to the future growth of the institution.

Under the present laws, in the commitment of the insane from the District it is necessary to try each case in open court and in the presence of a jury. The necessity for such course is of doubtful propriety, as it can only have the effect of humiliating both the patient and the patient's relatives and has a deleterious effect upon the condition of the person whose mental status is under investigation. In a majority of the States the presence in court of the party whose sanity is to be inquired into is discretionary with the court, and likewise the trial by jury is in the discretion of the court. Persons not residents of the District are frequently arrested, tried, and convicted of vagrancy and other misdemeanors, sentenced for short periods in one of the correctional institutions of the District, and thereafter becoming insane are transferred to the Government Hospital, and their relatives being unknown they become a perpetual charge on the United States.

The law providing for the transfer to this institution of persons charged with crime in the custody of Federal officers or after conviction likewise needs revision. During the period when Indian Territory was practically under the supervision of the Secretary of the Interior it was customary, because they had no place in which to confine the insane in that Territory, to transfer persons committing minor or other offenses in that district, on the slightest evidence of temporary mental aberration, to the Government Hospital for the Insane; and even at the present time United States prisoners convicted in various sections of the country and serving short sentences becoming temporarily insane or mentally incompetent are at once transferred to the Government Hospital; whereas if they had been cared for in the district in which the crime was committed, after the serving of the sentence they would be immediately turned over to the custody of those charged with the care of the insane in the community of which they were legal residents, and the United States be not charged with their care and treatment.

After careful consideration of all the circumstances, and as a result of conferences between officials of this Department and other departments of the Government interested in the matter, a committee was organized consisting of the following: Surg. Gen. George H. Torney, representing the Secretary of War; Surg. A. W. Dunbar, representing the Secretary of the Navy; Robert V. La Dow, superintendent of prisons, representing the Attorney General; Maj. William V. Judson, Corps of Engineers, United States Army, representing the District of Columbia; Mr. Scott C. Bone, representing the board of visitors; and Dr. William A. White, superintendent of the hospital, representing the Secretary of the Interior. The committee was instructed as follows:

1. To investigate and report on any defects in the laws governing the conduct of the institution and the commitment of patients thereto.

2. To investigate and report on the advisability of continuing therein patients committed from the District, and from the Army and Navy, from distant points.

3. To recommend as to the policy to be adopted relating to the growth of the institution, and the matter of additional lands, buildings, equipment, etc.

4. To report on the present conduct of the institution, and to make any recommendations necessary for the improvement of the service and the advancement of the interests of the inmates.

The report of the above-mentioned committee has been submitted and is now under consideration.

## FREEDMEN'S HOSPITAL.

There were 2,900 indoor patients treated in this institution during the year, an increase of 31 over the preceding year. One thousand eight hundred and eighty-two cases were received from the District of Columbia and 1,018 from various States. Two thousand seven hundred and twenty-four were discharged, of whom 1,416 recovered, 919 improved, 138 were unimproved, 17 were not treated, and 234 died. The number of patients remaining in the hospital at the close of the year was 176. Of the deaths reported, 57 were beyond medical and surgical aid when received. The surgical work has been very heavy during the past year, involving 1,767 operations, an increase of 285 over the previous year. In the out-patient department, 4,839 were treated, an increase of 1,113 over last year.

The account with the Board of Charities of the District of Columbia shows an unpaid balance of $73,505.71. It is hoped that the Commissioners of the District may see their way clear to include in future estimates to Congress a sum sufficient to cover the contract price for the care of all patients who have been admitted to the hospital as residents of the District of Columbia. The bill rendered during the past year for the care and treatment of this class of patients amounted to $37,139.36, or $11,639.36 more than the appropriation received for this purpose.

The training school of nursing has completed its seventeenth year of work and is represented by 217 graduates. These women are engaged successfully in private nursing and not a few are engaged in institutional work in various parts of the country. At the graduating exercises held on May 19, 1911, 13 nurses received their diplomas.

## HOWARD UNIVERSITY.

Howard University was incorporated by the act of March 2, 1867 (14 Stats., 338). The purpose of the incorporation named in the first section of the act was "for the education of youth in the liberal arts and sciences." The incorporators were declared to be "a body politic and corporate, with perpetual succession," etc. Control was vested in a board of 17 trustees.

The incorporators and their successors were authorized to take for the university property, of any character, "by gift, devise, grant, donation, bargain, sale, conveyance, assurance, or will;" to transfer or lease any of the property of the university; and to place at interest, in such manner as a majority of the incorporators or their successors should decide, any money belonging to the university, and with the general powers usually conferred on corporations with reference to the right to sue and be sued in any courts of law and equity, in actions of any character. Congress reserved the right to alter, amend, or repeal the act of incorporation.

The enrollment of the university for the past year was 1,382. The international character of the institution is shown by the fact that these students came from 37 States and 11 foreign countries—from British West Indies 83, British Guiana 7, Cuba 6, Porto Rico 5, Africa and South America 3, and from Dutch West Indies, Bermuda, Liberia, and the Republic of Panama 1 each. Two hundred students completed their studies in the institution, of whom 129 received degrees as follows: Twenty-eight M. D.; 17 D. D. S.; 8 Phar. D.; 28 LL. B.; 6 B. D.; 37 A. B.; and 5 Ped. B.

The school of theology receives no aid from Congress, but is supported entirely through endowments and special gifts. It requires no doctrinal tests, is interdenominational, and is open for all who are preparing for greater efficiency in moral and religious work.

No appropriation was made by Congress for the support of the university until March 3, 1879, although it was established in 1867. In 1879, $10,000 was appropriated "for maintenance." From March 3, 1879, to June 30, 1911, Congress has appropriated for this institution a total of $1,386,340, divided as follows: For maintenance, $894,700; for scientific building and equipment, $90,000; for addition to the manual-training building, $23,000; for tools, books, and improvement of grounds and buildings, equipment of different departments, chemical apparatus, fuel, light, etc., $360,300; and for the construction of a building for coal storage and for other improvements to the university plant, $18,340.

The only buildings erected from appropriations made by Congress are the scientific building, the addition to the manual-training building, and the building for the storage of coal, but for many years separate appropriations have been made for the repairs of buildings and the improvement of grounds. For several years past these two items have been combined in making the appropriations.

A report of the secretary of the university, dated November 10, 1911, shows that on September 30, 1911, the total value of all property belonging to the university was $1,660,748.64, of which $395,504.46 represents endowments. The total amount appropriated by Congress for the university is $1,386,340; the sum of the endowments and the appropriations is $1,781,844.46. The plant, therefore, as it stood on September 30, was worth $121,095.82 less than the aggregate amount of the endowments and the total amount appropriated by Congress for all purposes.

As the law now exists, this Department has no representation on the board of trustees, although it has for several years given administrative examination to the accounts of the special disbursing officer handling appropriations made by Congress for the university. Neither has the Government any title to the buildings erected or improvements made to the buildings from congressional appropriation. At the beginning of the present fiscal year, however, the Secretary of the Interior has, under his general supervisory power and for administrative reasons, directed the disbursing officer of this Department to disburse all moneys appropriated by Congress for this institution. The president of the university, in his report for the last fiscal year, says: "It has become increasingly evident that the institution must depend for the years to come almost entirely on Government support and current receipts from tuition in the several departments." Considering the magnitude of the appropriations made by Congress for the maintenance, improvement, etc., of the university, and the statement of the president thereof, it is manifest that the Government should have greater supervision over the institution, and it is therefore recommended that the act of incorporation of March 2, 1867, be so amended as to give the Government a proper representation on the board of trustees, that appropriations made by Congress shall be expended under the direction of the Secretary of the Interior, and that the institution be required to protect the United States against possible transfer or loss of the lands upon which buildings have heretofore or may hereafter be erected from funds provided by the Government.

### COLUMBIA INSTITUTION FOR THE DEAF.

This Department has no supervision over the expenditures of the appropriation made by Congress for, or general supervision over, the administration of the affairs of the Columbia Institution for the Deaf. Under existing law the only duty imposed upon the Secretary of the Interior in relation to this institution is the reception of the annual report thereof and the admission of indigent deaf mutes of the several States and Territories to that institution for instruction in the collegiate branch thereof. In my judgment this Department should either be given control of the expenditure of the appropriation and the administration of this institution, or it should be divested of the minor authority now conferred upon it by law, and the entire control and management of the Columbia Institution for the Deaf vested in the president and board of directors thereof, they being required to report directly to Congress as to the administration of the institution.

### MARYLAND SCHOOL FOR THE BLIND.

Section 2 of the act of Congress approved May 29, 1858 (11 Stat., 294), authorizes the Secretary of the Interior to place for instruction in an institution for the blind, in the State of Maryland or some other

State, the indigent blind children of teachable age who are children of persons actually engaged in the military and naval service of the United States, and under section 4869, Revised Statutes of the United States, the blind children of teachable age belonging to the District of Columbia.

The act of May 26, 1908 (35 Stat., 295), making appropriations for the District of Columbia, provided that after July 1, 1908, a contract should be entered into by the Commissioners of the District of Columbia for the instruction, in Maryland or some other State, of indigent blind children of the District, appropriated $6,000 for the purpose, and repealed the permanent indefinite appropriation under section 3689 of the Revised Statutes. Inasmuch as the Secretary of the Interior, by section 2 of the act of May 29, 1858 (11 Stat., 293), was also charged witb providing for the instruction of the blind children of all persons in the military and naval service of the United States, while such persons are actually in such service, the expense to be defrayed from the permanent indefinite appropriation above referred to, the question was submitted to the Comptroller of the Treasury as to whether that appropriation was repealed so far as to be no longer available for the instruction of this class of beneficiaries. In an opinion rendered October 27, 1908, the Comptroller of the Treasury held that the act of May 26, 1908, supra, only repealed the provisions of section 3489 of the Revised Statutes to the extent that said section provides for the education of the blind children of the District of Columbia, and that the permanent indefinite appropriation in question is still available for instructing the blind children of all persons in the military and naval service of the United States, in some institution in Maryland or some other State, and that the Secretary of the Interior is authorized to continue to issue permits for the instruction of such children. No permits for this class of beneficiaries were issued during the past year.

## SUPERINTENDENT OF THE UNITED STATES CAPITOL BUILDING AND GROUNDS.

The superintendent in his annual report calls attention to the increased administrative service now rendered. In 1905 supervision was exercised over the Capitol Building and Grounds; the Courthouse and Court of Claims Building. Since that date there have been added the Senate and House Office Buildings, the heating, lighting, and power plant for the Capitol and other congressional buildings, and subways connecting the Capitol with the Office Buildings; the court of appeals addition to the courthouse.

The improvements and repairs in the Capitol and Senate and House Office Buildings have been carried on successfully. The central portion of the Capitol and the Dome has been cleaned down and painted; the walls and corridors leading from the crypt in the basement story northward to the Senate wing and those leading northward from the Rotunda were repaired and refinished to conform to the surroundings; an iron stairway has been constructed leading from the corridor in front of the Senate post office, basement story, to the subbasement floor below, landing directly at the entrance to the subway connecting the Capitol with the Senate Office Building. Committee rooms and other rooms have been painted and decorated and plumbing fixtures have been installed. Statuary Hall has been thoroughly overhauled and the walls and ornamental ceiling painted. New chandeliers have been installed in a number of rooms.

The practical completion and satisfactory operation of the new congressional heating and power plant has supplied the Capitol, the Senate and House Office Buildings, and, in a large measure, the Library of Congress during the past year with light, heat, and power.

The expenditures were as follows: Capitol Building and repairs, $39,450; improving the Capitol grounds, $32,100; lighting Capitol grounds, etc., $100,000; engine house, Senate and House stables, $1,500; repairs to courthouse of District of Columbia, $10,000; Court of Claims Building, $3,831.

## GENERAL EDUCATION BOARD.

This corporation, which was created by the act of Congress approved January 12, 1903, section 6 of which requires the corporation to annually file with the Secretary of the Interior a report, in writing, stating in detail the property, real and personal, held by the corporation, and the expenditure or other use or disposition of the same, or the income thereof during the preceding year, has for its object the promotion of education within the United States. The corporation owns no real estate, its property consisting of securities and money divided into various funds, according to the purpose for which it is to be used.

On June 30, 1911, the capital funds belonging without restriction to the board amounted to $32,246,377.29, invested as follows: Bonds, $15,786,229.65; stocks, $16,430,758.68; cash, $29,388.96.

The income from the above funds, including income earned but not received and gain on securities sold amounting to $20,594.65, amounted during the year to $1,861,073.15. A gift from Mr. John D. Rockefeller from the income of the special fund in the hands of the board increased this by $200,000, and the unexpended balance from previous year, amounting to $3,636,778.37, brought up the total undisbursed income to $5,697,851.52.

The disbursements during the year were as follows:

| | |
|---|---|
| Payments on account of appropriations to colleges, universities, etc. | $1,307,878.86 |
| Payments on account of appropriations for farmers' cooperative demonstration work carried on by the United States Department of Agriculture | 113,251.62 |
| Payments made on account of appropriations for salaries and expenses of professors of secondary education in Southern States | 29,859.79 |
| Expenses | 34,139.44 |
| Total | 1,485,129.71 |

This leaves an undisbursed balance of income on June 30, 1911, of $4,212,721.81. It is invested as follows: Bonds, $2,472,582.05; stocks, $805,963.29; income receivable, $204,844.35; cash, $729,332.12

It should be noted, however, that against this balance there are unpaid appropriations amounting to $4,158,668.89.

The John D. Rockefeller special fund is a fund which Mr. Rockefeller controls both as to principal and income. During the year the board, at his direction, gave from the principal $9,912,540.74 to the University of Chicago, one-tenth to be delivered January 1 of each year for 10 years; $924,707.63 was also given during the year to the Rockefeller Institute for Medical Research, of New York. This leaves an undisbursed balance of the fund amounting to $1,568,141.54, which is invested as follows: Bonds, $242,135; stocks, $1,225,940.15; cash, $100,066.39.

The income from this fund during the year was $561,591.42, which, added to the balance from the previous year, makes a total of $1,033,966.14. Disbursements during year were as follows:

| | |
|---|---|
| Gifts to the University of Chicago | $112,600.00 |
| Gift to general education board income account | 200,000.00 |
| Expenses | 2,796.23 |
| Total | 315,396.23 |

This leaves a balance of $718,569.91, which is invested as follows: Bonds, $441,973.65; stocks, $2,625; income receivable, $97,855; cash, $176,116.26.

The Anna T. Jeanes fund, the income to be used for negro rural schools, amounts to $200,000. It is invested as follows: Bonds. $182,877.51; stocks, $16,645; cash, $477.49.

The income from this fund during the year was $9,206.81. Added to the balance from the previous year the total available income amounted to $13,711.51. Of this, $8,589.25 was appropriated and paid to various schools, leaving a balance of $5,122.26, all in cash.

During the year all securities and funds held by the board for the Rockefeller Institute for Medical Research were turned over to the board of trustees of that corporation.

## IMPROVEMENTS AT LAWTON, OKLAHOMA.

By the act of Congress approved March 27, 1908 (35 Stat., 49), it was provided—

> That the Secretary of the Interior be, and he is hereby, authorized and directed to plat and sell in accordance with section twenty-three hundred and eighty-one of the Revised Statutes of the United States the following-described tract of land, to wit: The south half of section thirty, township two north, range eleven west, of the Indian meridian, in the State of Oklahoma: *Provided*, That the Secretary of the Interior shall reserve from said tract of land, when surveyed, one block for public-park and two blocks for public-school purposes, and shall cause to be erected two suitable school buildings out of the proceeds arising from said sale, the remainder of proceeds, after deducting the expenses necessary to carry out the provisions of this act, to be converted into and become a part of the fund belonging to the Comanche, Kiowa, and Apache Tribes of Indians: *Provided further*, That said sale shall be made as soon as practicable after the approval of this act.

The act of Congress approved February 18, 1909 (35 Stat., 636), provides for extension of time of payments on certain homestead entries in Oklahoma, and amends the above act in the following language:

> The Secretary of the Interior is hereby authorized, in his discretion, to extend the time of payments to the purchasers and their assigns applying therefor upon the lots sold, or to be sold, in pursuance of an act entitled "An act providing for the platting and selling of the south half of section thirty, township two north, range eleven west, of the Indian meridian, in the State of Oklahoma, for town-site purposes," approved March twenty-seventh, nineteen hundred and eight, and the Secretary of the Interior is authorized to permit the unpaid purchase money for such lots to be paid in such installments and at such times as he may deem proper: *Provided, however*, That said purchasers or their assigns shall be required to pay interest on all such deferred payments sufficient to pay the Kiowa, Comanche, and Apache Indians four per centum interest on the payments so deferred, and to pay the local authorities entitled to receive the same the equivalent of the State, county, city, and school tax at the legal rate upon such valuation as the Secretary of the Interior may determine, and to which the lots would be liable if patented, such extension of time not to exceed four years from the date of the approval of this act: *Provided, further*, That not exceeding one-half of the amount which may be set aside by the Secretary of the Interior, under the act above referred to, for the construction of two school buildings may be applied by the Secretary of the Interior to such other improvements as he may deem for the public welfare.

By section 30 of the act of May 29, 1908, 20 per cent of receipts of sales from the above-mentioned source was set aside for use in connection with the construction of a courthouse and post-office building at Lawton, Oklahoma. The attention of the Secretary of the Treasury was called to the provisions of the foregoing acts, and he has set aside for the use of this department from the proceeds the sum of $147,047.03.

Thereafter plans and specifications were prepared for a 10-room schoolhouse to be located on block 31 of the north addition to Lawton and designated as school building No. 1. Contract for the work was let to the McHenry-Beatty Co., of East Liverpool, Ohio, and the building was completed at a total cost, including sidewalks, architect's fees, and supervision of work, of $54,822.96. Contract was also let to E. M. Eby for the construction of a sanitary sewer, which was completed at a total cost, including plans and supervision of work, of $25,867.94. The building and sewer were formally accepted and turned over to the authorities of Lawton and are now in use.

On April 24, 1911, contract was let, after due advertisement, to the same firm for construction of an additional 10-room school building, to be located on block 26 of the north addition to Lawton, and to be designated as school building No. 2, and for the laying of sidewalks around it. The work is now in progress and, it is expected, will be completed early in 1912.

After deducting from the total proceeds of sales of lots, Lawton, Oklahoma, the amounts authorized by the acts of May 29, 1908, March 27, 1908, and February 18, 1909, the balance will, by operation of law, be "converted into and become a part of the fund belonging to the Comanche, Kiowa, and Apache Tribes of Indians."

## MEMORIAL TO JOHN WESLEY POWELL.

The International Geological Congress in 1904 considered the advisability of the construction of a suitable memorial of life service to Maj. John W. Powell, Director of the United States Geological Survey, to be erected on the brink of the Grand Canyon of the Colorado, and appointed a committee for the purpose of promoting the project. Thereafter, in the sundry civil act approved March 4, 1909 (35 Stat., 992), Congress, among other things, provided:

> MEMORIAL TO JOHN WESLEY POWELL: For the purpose of procuring and erecting on the brink of the Grand Canyon, in the Grand Canyon Forest Reserve in Arizona, a memorial to the late John Wesley Powell, with a suitable pedestal, if necessary, in recognition of his distinguished public services as a soldier, explorer, and administrator of Government scientific work, five thousand dollars: *Provided*, That the design for said memorial and the site for the same shall be approved by the Secretary of the Interior.

Thereafter, on March 4, 1909, the then Secretary of the Interior designated Dr. W. H. Holmes, Chief of the Bureau of Ethnology, Dr. C. D. Walcott, Secretary of the Smithsonian Institution, and Col. H. C. Rizer, chief clerk of the United States Geological Survey, as members of an advisory committee to assist him in determining the character of the monument and the selection of the best site. Finding it difficult to reach any definite conclusion regarding the character of the monument which would be appropriate and satisfactory without having a somewhat intimate acquaintance with the available sites for selection, the chairman of the committee, Dr. Holmes, visited the Grand Canyon in May, 1909, with a view to making the necessary observations. As a result of such visit the committee submitted a preliminary report recommending the selection of "Sentinel Point," on the rim of the canyon, from which the view of the Granite Gorge is awe-inspiring, as being the most suitable site for the monument, which was approved by the Department, and the committee was authorized to look further into the matter of design and erection of the monument.

On October 19, 1910, the committee submitted a further report, stating, among other things, that—

> In its report to you of June 24, 1909, the committee presented a number of suggestions that had been made touching the character of the proposed monument. After very full consideration the committee has concluded that the most feasible plan to follow is that embraced in the last-named suggestion there submitted, viz., a monumental seat or chair from which the canyon and the river could be viewed.
>
> A model of this plan is presented herewith.
>
> It is proposed to insert in the back of the chair a bronze medallion portrait of Maj. Powell with appropriate inscription. Owing to the limitations marked by the appropriation the committee finds that the only suitable material that can be adopted in construction is concrete.
>
> It is therefore recommended that the committee be authorized to at once proceed to negotiate with responsible parties for effecting the above-indicated design. It is further recommended that the Director of the Reclamation Service be authorized to detail some competent person with experience to superintend the construction of the proposed design, the necessary expenses thus incurred to be paid from the sum of $5,000 heretofore appropriated for the erection of this monument.

This report was approved by the Department October 20, 1910, since which time the committee has had the matter intrusted them under further consideration, and has submitted a tentative design and model for the monument which is now under consideration.

## MARITIME CANAL CO. OF NICARAGUA.

Section 6 of the act of Congress approved February 20, 1889, entitled "An act to incorporate the Maritime Canal Company of Nicaragua" (25 Stat., 675), provides:

> Said company shall make a report on the first Monday of December in each year to the Secretary of the Interior, which shall be duly verified on oath by the president and secretary thereof, giving such detailed statement of its affairs, and of its assets and liabilities, as may be required by the Secretary of the Interior, and any willfully false statement so made shall be deemed perjury, and punishable as such. And it shall be the duty of the Secretary of the Interior to require such annual statement and to prescribe the form thereof and the particulars to be given thereby.

The report of this corporation has been duly transmitted to Congress. In view of the fact, however, that the Maritime Canal Co. of Nicaragua has no relations whatever with this Department and the Secretary has no duty to perform thereto, except as specified in the above-mentioned law, it is recommended that the act be so amended as to require the corporation to submit directly to Congress such form of report as it may prescribe.

Very respectfully,

WALTER L. FISHER,
*Secretary.*

The PRESIDENT.

# APPENDICES.

## APPENDIX A.

### Land Classification Work.

[Referred to on p. 30 of this report.]

*Progress of coal classification and valuation.*

STATUS ON JULY 1, 1910.[1]

| State. | Withdrawals outstanding. | Coal lands classified. | Valuation. | Valuation at minimum price. |
|---|---|---|---|---|
| | *Acres.* | *Acres.* | | |
| Alaska | (2) | | | |
| Arkansas | | 60,715 | $1,473,762 | $1,214,280 |
| Arizona | 161,210 | | | |
| California | | 7,720 | 585,086 | 154,404 |
| Colorado | 6,656,518 | 2,058,094 | 118,818,995 | 37,911,729 |
| Montana | 23,920,978 | 1,277,491 | 30,657,031 | 23,397,552 |
| New Mexico | 3,155,295 | 1,816,144 | 22,272,272 | 22,118,654 |
| North Dakota | | 530,491 | 7,579,630 | 7,579,630 |
| Oregon | 379,452 | 80 | 1,600 | 1,600 |
| Utah | 5,897,958 | 468,040 | 14,981,435 | 6,957,177 |
| Washington | 2,210,847 | | | |
| Wyoming | 10,854,704 | 4,458,151 | 251,019,401 | 76,404,019 |
| Total | 53,236,962 | 10,676,926 | 447,389,212 | 175,739,045 |

[1] Correction of previous report.

[2] Area unknown.

STATUS ON JULY 1, 1911.

| | | | | |
|---|---|---|---|---|
| Alaska | (1) | | | |
| Arkansas | | 60,715 | $1,473,762 | $1,214,280 |
| Arizona | 118,718 | | | |
| California | 239,903 | 7,720 | 585,086 | 154,404 |
| Colorado | 5,517,338 | 2,873,929 | 167,775,104 | 50,309,589 |
| Idaho | 6,985,417 | | | |
| Montana | 19,890,471 | 3,512,348 | 94,463,647 | 76,398,380 |
| Nevada | 92,141 | | | |
| New Mexico | 5,809,490 | 954,214 | 21,261,664 | 13,523,792 |
| North Dakota | 18,454,490 | 230,814 | 4,582,860 | 4,582,860 |
| Oregon | 3,521 | 1,897 | 49,909 | 37,919 |
| South Dakota | 2,375,263 | | | |
| Utah | 6,221,314 | 636,479 | 36,576,849 | 8,287,783 |
| Washington | 2,210,807 | 40 | 2,000 | 800 |
| Wyoming | 7,013,543 | 7,147,719 | 381,804,858 | 109,933,717 |
| Total | 74,932,416 | 15,425,875 | 708,575,739 | 264,443,524 |

[1] Area unknown.

STATUS ON DECEMBER 1, 1911.

| | | | | |
|---|---|---|---|---|
| | *Acres.* | *Acres.* | | |
| Alaska | (1) | | | |
| Arkansas | | 60,715 | $1,473,762 | $1,214,280 |
| Arizona | 118,718 | | | |
| California | 239,903 | 7,720 | 585,086 | 154,404 |
| Colorado | 5,464,662 | 2,873,965 | 167,776,544 | 50,310,309 |
| Idaho | 1,606,262 | | | |
| Montana | 18,711,566 | 3,697,824 | 97,276,955 | 78,678,983 |
| Nevada | 92,141 | | | |
| New Mexico | 5,809,490 | 954,214 | 21,261,664 | 13,523,792 |
| North Dakota | 18,454,490 | 230,814 | 4,582,860 | 4,582,860 |
| Oregon | 3,521 | 1,897 | 49,909 | 37,919 |
| South Dakota | 2,034,131 | | | |
| Utah | 6,134,089 | 646,521 | 36,709,469 | 8,399,403 |
| Washington | 2,210,086 | 40 | 2,000 | 800 |
| Wyoming | 6,845,859 | 7,147,719 | 381,804,858 | 109,933,717 |
| Total | 67,724,918 | 15,621,429 | 711,523,107 | 266,836,437 |

[1] Area unknown.

## *Oil-land withdrawals.*

| State. | Withdrawals outstanding July 1, 1910.[1] | Fiscal year ended June 30, 1911. | | Withdrawals outstanding July 1, 1911. | Period July 1, 1911, to Dec. 1, 1911. | | Withdrawals outstanding Dec. 1, 1911. |
|---|---|---|---|---|---|---|---|
| | | New withdrawals. | Restorations. | | Withdrawals. | Restorations. | |
| | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* |
| Alaska | | (2) | | (2) | | | (2) |
| Arizona | 230,400 | | | 230,400 | | | 230,400 |
| California | 2,498,173 | 305,802 | 1,211,271 | 1,592,704 | 14,719 | | 1,607,423 |
| Colorado | 87,474 | | | 87,474 | | | 87,474 |
| Louisiana | 414,720 | | | 414,720 | | | 414,720 |
| New Mexico | 419,901 | | | 419,901 | | 419,901 | |
| Oregon | 74,849 | | | 74,849 | | | 74,849 |
| Utah | 581,566 | | | 581,566 | | | 581.566 |
| Wyoming | 255,461 | 334,802 | 21,448 | 568,815 | | 170,333 | 398,482 |
| Total | 4,562,544 | 640,604 | 1,232,719 | 3,970,429 | 14,719 | 590,234 | 3,394,914 |

[1] Correction of previous report.

[2] Unsurveyed.

## *Phosphate-land withdrawals.*

| State. | Withdrawals outstanding July 1, 1910. | Fiscal year ended June 30, 1911. | | Withdrawals outstanding July 1, 1911. | Period July 1, 1911, to Dec. 1, 1911. | | Withdrawals outstanding Dec. 1, 1911. |
|---|---|---|---|---|---|---|---|
| | | New withdrawals. | Restorations. | | Withdrawals. | Restorations. | |
| | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* |
| Florida | 2,400 | 35,439 | | 37,839 | | 2,199 | 35,640 |
| Idaho | 1,102,317 | | 149,929 | 952,388 | | | 952,388 |
| Montana | | 33,950 | | 33,950 | | | 33,950 |
| Utah | 107,545 | 200 | | 107,745 | | | 107,745 |
| Wyoming | 1,267,494 | | | 1,267,494 | | 826 | 1,266,668 |
| Total | 2,479,756 | 69,589 | 149,929 | 2,399,416 | | 3,025 | 2,396,391 |

## *Power-site withdrawals.*

| State. | Withdrawals outstanding July 1, 1910. | Fiscal year ended June 30, 1911. | | Withdrawals outstanding July 1, 1911. | Period July 1, 1911, to Dec. 1, 1911. | | Withdrawals outstanding Dec. 1, 1911. |
|---|---|---|---|---|---|---|---|
| | | New withdrawals. | Restorations. | | Withdrawals. | Restorations. | |
| | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* |
| Arizona | 107,550 | 106,000 | 160 | 213,390 | | 23,448 | 189,942 |
| California | 47,819 | 5,870 | | 53,689 | 72,112 | | 125,801 |
| Colorado | 201,549 | 10,131 | 2,506 | 209,174 | 4,018 | | 213,192 |
| Idaho | 230,971 | 16,477 | 17,756 | 229,692 | 55,005 | 4,093 | 280,604 |
| Minnesota | | 8,388 | | 8,388 | 2,866 | | 11,254 |
| Montana | 122,515 | 16,803 | 11,631 | 127,687 | 240 | 2,520 | 125,407 |
| Nevada | 14,091 | 1,284 | | 15,375 | | | 15,375 |
| New Mexico | 14,536 | | 4,830 | 9,706 | | | 9,706 |
| Oregon | 176,721 | 7,948 | 22,874 | 161,795 | 16,814 | | 178,609 |
| Utah | 379,912 | 1,080 | 33,740 | 347,252 | 22,322 | | 369,574 |
| Washington | 55.439 | 26,404 | 1,457 | 80,386 | 22,887 | 2,136 | 101,137 |
| Wyoming | 103,396 | 4,094 | 48,601 | 58,889 | 2,660 | 400 | 61,149 |
| Total | 1,454,499 | 204,479 | 143,555 | 1,515,423 | 198,924 | 32,597 | 1,681,750 |

*Designations under the enlarged homestead acts.*

| State. | Acreage designated July 1, 1910.[1] | Fiscal year July 1, 1910, to June 30, 1911. |  | Acreage designated July 1, 1911. | Period July 1, 1911, to Nov. 30, 1911. |  | Acreage designated Dec. 1, 1911. |
|---|---|---|---|---|---|---|---|
|  |  | Designations. | Cancellations. |  | Designations. | Cancellations. |  |
|  | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* |
| Arizona | 26,657,280 | 90,400 | 157,763 | 26,589,917 | .......... | .......... | 26,589,917 |
| Colorado | 20,303,720 | 50,789 | .......... | 20,354,509 | .......... | .......... | 20,354,509 |
| Idaho: |  |  |  |  |  |  |  |
| Secs. 1-5 only | .......... | 5,347,383 | 10,545 | 5,336,838 | 11,109 | 1,520 | 5,346,427 |
| Sec. 6 | .......... | 3,841 | .......... | 3,841 | 538 | .......... | 4,379 |
| Montana | 29,686,126 | 2,167,404 | .......... | 31,853,530 | 67,973 | .......... | 31,921,503 |
| Nevada | 49,512,960 | .......... | .......... | 49,512,960 | .......... | .......... | 49,512,960 |
| New Mexico | 15,883,343 | 423,332 | .......... | 16,306,675 | .......... | .......... | 16,306,675 |
| Oregon | 9,166,960 | 2,071,661 | 24,960 | 11,213,661 | 65,685 | .......... | 11,279,346 |
| Utah: |  |  |  |  |  |  |  |
| Secs. 1-5 only | 6,654,469 | 111,311 | .......... | 6,765,780 | 3,833 | .......... | 6,769,613 |
| Sec. 6 | 1,245,818 | 129,129 | .......... | 1,374,947 | 840 | .......... | 1,375,787 |
| Washington | 3,401,816 | 1,080 | .......... | 3,402,896 | .......... | .......... | 3,402,896 |
| Wyoming | 16,904,673 | 634,268 | .......... | 17,538,941 | 35,962 | .......... | 17,574,903 |
| Total | 179,417,165 | 11,030,598 | 193,268 | 190,254,495 | 185,940 | 1,520 | 190,438,915 |

[1] Correction of previous report.

*Metalliferous classifications (Northern Pacific R. R. grant lands), July 1, 1910, to June 30, 1911—No classifications July 1, 1911, to Nov. 30, 1911.*

| State. | Mineral. | Nonmineral. | Total. |
|---|---|---|---|
|  | *Acres.* | *Acres.* | *Acres.* |
| Montana | 130,386 | 21,722 | 152,108 |
| Idaho | 45,645 | 90,712 | 136,357 |
| Total | 176,031 | 112,434 | 288,465 |

## APPENDIX B.

### National Park Statistics.

[Referred to on pages 61 and 75 of this report.]

*Appropriations and revenues of national parks for the fiscal years 1906-1911.*

|  | Appropriation. | Revenue. | Total. |
|---|---|---|---|
| Yellowstone National Park: |  |  |  |
| 1906 | $7,500.00 | $1,522.50 | .......... |
| 1907 | 7,500.00 | 2,808.96 | .......... |
| 1908 | 8,000.00 | 4,699.65 | .......... |
| 1909 | 8,000.00 | 4,790.20 | .......... |
| 1910 | 8,000.00 | 18,188.82 | .......... |
| 1911 | 8,500.00 | 23,420.13 | .......... |
|  | 47,500.00 | 55,430.26 | $102,930.26 |
| Yosemite National Park: |  |  |  |
| 1906 | 5,400.00 | 1,000.00 | .......... |
| 1907 | 5,750.00 | 9,193.04 | .......... |
| 1908 | 30,000.00 | 14,390.06 | .......... |
| 1909 | 30,000.00 | 16,051.17 | .......... |
| 1910 | 30,000.00 | 21,373.18 | .......... |
| 1911 | 62,000.00 | 35,765.48 | .......... |
|  | 163,150.00 | 97,772.93 | 260,922.93 |

*Appropriations and revenues of national parks for the fiscal years 1906–1911*—Continued.

| | Appropriation. | Revenue. | Total. |
|---|---|---|---|
| **Sequoia National Park:** | | | |
| 1906 | $10,000.00 | | |
| 1907 | 10,000.00 | $159.50 | |
| 1908 | 15,550.00 | 43.15 | |
| 1909 | 15,550.00 | 46.57 | |
| 1910 | 15,550.00 | 121.78 | |
| 1911 | 15,550.00 | 255.65 | |
| | 82,200.00 | 626.65 | $82,826.65 |
| **General Grant National Park:** | | | |
| 1906 | 2,000.00 | | |
| 1907 | 2,000.00 | | |
| 1908 | 2,000.00 | 63.75 | |
| 1909 | 2,000.00 | | |
| 1910 | 2,000.00 | 50.00 | |
| 1911 | 2,000.00 | 324.39 | |
| | 12,000.00 | 438.14 | 12,438.14 |
| **Crater Lake National Park:** | | | |
| 1906 | 3,000.00 | | |
| 1907–8 | 7,315.00 | 25.00 | |
| 1909 | 3,000.00 | | |
| 1910 | 3,000.00 | 11.00 | |
| 1911 | 3,000.00 | 30.00 | |
| | 19,315.00 | 66.00 | 19,381.00 |
| **Mesa Verde National Park:** | | | |
| 1907–8 | 7,500.00 | | |
| 1909 | 7,500.00 | | |
| 1910 | 7,500.00 | | |
| 1911 | 20,000.00 | 100.00 | |
| | 42,500.00 | 100.00 | 42,600.00 |
| **Mount Rainier National Park:** | | | |
| 1907 | 2,500.00 | 205.22 | |
| 1908 | 3,000.00 | 170.00 | |
| 1909 | 3,000.00 | 1,104.79 | |
| 1910 | 3,000.00 | 8,953.79 | |
| 1911 | 3,000.00 | 7,748.48 | |
| | 14,500.00 | 18,182.28 | 32,682.28 |
| **Wind Cave National Park:** | | | |
| 1906 | 2,500.00 | | |
| 1907 | 4,400.00 | | |
| 1908 | 2,500.00 | 200.00 | |
| 1909 | 2,500.00 | | |
| 1910 | 2,500.00 | 340.75 | |
| 1911 | 2,500.00 | 340.00 | |
| | 16,900.00 | 880.75 | 17,780.75 |
| **Platt National Park:** | | | |
| 1906 | | 37,307.44 | |
| 1907 | | 178.00 | |
| 1908 | | 7,021.00 | |
| 1909 | | 272.00 | |
| 1910 | | 2,130.31 | |
| 1911 | 5,000.00 | 422.75 | |
| | 5,000.00 | 47,331.50 | 52,331.50 |
| **Glacier National Park:** | | | |
| 1911 | 15,000.00 | 326.88 | 15,326.88 |
| | 418,065.00 | 221,155.39 | 639,220.39 |

| | |
|---|---|
| **Total appropriations** | $418,065.00 |
| **Total revenues** | 221,155.39 |
| | 639,220.39 |

*Visitors to national parks, 1906 to 1911.*

| Name of park. | 1906 | 1907 | 1908 | 1909 | 1910 | 1911 |
|---|---|---|---|---|---|---|
| Yellowstone National Park | 17,182 | 16,414 | 19,542 | 32,545 | 19,575 | 23,054 |
| Yosemite National Park | 5,414 | 7,102 | 8,850 | 13,182 | 13,619 | 12,530 |
| Sequoia National Park | 700 | 900 | 1,251 | 854 | 2,407 | 3,114 |
| General Grant National Park | 900 | 1,100 | 1,773 | 798 | 1,178 | 2,160 |
| Mount Rainier National Park | 1,786 | 2,068 | 3,511 | 5,968 | 8,000 | 10,306 |
| Mesa Verde National Park | (1) | (1) | 80 | 165 | 250 | 206 |
| Crater Lake National Park | 1,800 | 2,600 | 5,275 | 4,171 | 5,000 | [2] 4,500 |
| Wind Cave National Park | 2,887 | 2,751 | 3,171 | 3,216 | 3,387 | 3,887 |
| Platt National Park | (1) | 28,000 | 26,000 | 25,000 | [2] 25,000 | 30,000 |
| Sullys Hill National Park | (1) | 400 | 250 | 190 | 190 | [2] 200 |
| Hot Springs Reservation | (1) | (1) | (1) | (1) | 120,000 | 130,000 |
| Glacier National Park | ........ | ........ | ........ | ........ | ........ | [2] 4,000 |

[1] No record kept.

[2] Estimate.

### *Location, area, and characteristics of national parks.*

| Name. | Location. | When established. | Area (acres). | Private lands (acres). | Visitors, 1911. | Special characteristics. |
|---|---|---|---|---|---|---|
| Yellowstone | Wyoming, Montana, and Idaho. | Mar. 1, 1872 | 2,142,720 | None. | 23,054 | Wonderful scenery, geysers, boiling springs, mud volcanoes and springs, mountains, grand waterfalls, brilliant-hued canyons, great lake 8,000 feet above the level of the sea; wild animals. |
| Yosemite | California | Oct. 1, 1890 | 719,622 | 19,827 | 12,530 | Mountain scenery, magnificent waterfalls, the Hetch Hetchy and Yosemite Valley, ice-sculptured canyons, glacier lakes, forests. |
| Sequoia | do | Sept. 25, 1890 | 161,597 | 3,716.96 | 3,114 | The home of the "Big Tree" (Sequoia gigantea), growing to a height of 300 feet with a diameter of 30 feet, the bark being 2 feet thick; rugged and picturesque scenery, beautiful cascades and falls, and wonderful caves. |
| General Grant | do | Oct. 1, 1890 | 2,536 | 160 | 2,160 | |
| Mount Rainier | Washington | Mar. 2, 1899 | 207,360 | 18.2 | 10,306 | Glaciers and wild mountain scenery. |
| Crater Lake | Oregon | May 22, 1902 | 159,360 | 2,458.11 | 4,500 | Rugged mountain scenery, beautiful lake within the crater of an extinct volcano, etc. |
| Wind Cave | South Dakota | Jan. 9, 1903 | 10,522 | 160 | 3,887 | Well known for a cavern having many miles of galleries and numerous chambers of considerable size containing many peculiar formations. |
| Platt | Oklahoma | July 1, 1902<br>Apr. 21, 1904 | 848.22 | None. | 30,000 | Noted for its bromide and other springs, the waters of which have medicinal qualities; park well wooded, scenery picturesque. |
| Mesa Verde | Colorado | June 29, 1906 | 42,376 | 880 | 206 | Set aside to preserve the prehistoric ruins of an ancient people; rugged scenery. |
| 5-mile strip for protection of ruins. | do | do | 175,360 | | | |
| Hot Springs Reservation | Arkansas | June 16, 1880 | 911.63 | None. | 130,000 | Famous for its thermal springs, having wonderful medicinal qualities. |
| Glacier | Montana | May 11, 1910 | 981,681 | 16,668.11 | [1] 4,000 | Famed for its beautiful lakes derived from glaciers, lofty mountains clad with forests, magnificent glacial formations, numberless waterfalls. Game, fish, and birds abound. |
| Sullys Hill | North Dakota | Apr. 27, 1904 | 780 | None. | [1] 200 | Small rugged hills containing prehistoric ruins. Practically a local park. |
| Casa Grande Ruins | Arizona | Mar. 2, 1889 | 480 | None | [1] 450 | These ruins are one of the most noteworthy relics of a prehistoric age and people within the limits of the United States. Discovered in ruinous condition in 1694. |

[1] Estimated.

## APPENDIX C.

### Agriculture in Alaska.

[Referred to on page 53 of the report.]

DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,
*Washington, November 13, 1911.*

The honorable the SECRETARY OF THE INTERIOR.

MY DEAR MR. SECRETARY: In reply to your letter of November 9, I will state that this department has been studying the agricultural possibilities of Alaska since 1897. Experiment stations have been established at a number of places and there are such institutions now in operation at Sitka and Kodiak, representing the coast region, and at Rampart and Fairbanks, in the Yukon and Tanana Valleys.

The station at Rampart was established in 1900, and there has not been a season since then when most of the varieties of oats and barley seeded have not matured, and many years wheat and rye have also ripened. Naturally, great differences are noted for different varieties of grain, depending on the origin of the seed, character of the season, method of cultivation, etc. In 1909, out of 63 varieties of cereals sown, 55 ripened their entire crop. These included 1 variety of winter wheat, 7 of winter rye, 27 of spring barley, 15 of spring oats, and 1 each of spring wheat, emmer, and spring rye. In 1910, 32 varieties of spring barley and 20 out of 23 varieties of oats ripened their entire crop. Ten varieties of winter wheat, barley, and rye all matured. There are at present 23 acres under cultivation at this station, which is situated at approximately 65° 30′ north latitude.

At the Fairbanks station, which is near the town of that name and 3° 30′ farther south, there are about 70 acres under cultivation. Part of this land is devoted to growing oats and grass for hay, some to grain experiments, and about 7 acres were in potatoes during the past summer. The work at the Fairbanks station was not begun until in 1907, and an attempt is being made to demonstrate the feasibility of agriculture on a farm scale. Grains have matured here, and there has been no trouble in making hay from the native grasses or from oats especially sown for that purpose. Last year more than $1,500 worth of station-grown potatoes were sold, and this year the crop of 7 acres was estimated in September as worth fully $3,000. At both the Rampart and Fairbanks stations experiments are in progress in breeding earlier and hardier grains, and some promising results have already been attained.

At Sitka, where the headquarters of the Alaska stations are maintained, the investigations are confined to horticultural operations. Varieties of all the hardy garden vegetables have been tested and those best suited to Alaskan conditions determined. Through these experiments and others in cooperation with the branch stations and individuals throughout the Territory, it is possible to determine what varieties of vegetables are best suited to the different parts of the country. Some work with small fruits is in progress at Sitka, and during the past season about $65 worth of strawberries were sold from plants that resulted from the crossing of a native and a cultivated species of strawberry.

On the island of Kodiak experiments with live stock have been in progress since 1907, when there were assembled 11 head of cattle from Kenai, 6 from Wood Island, and 19 purchased in the States. The cattle are all pedigreed Galloways, and those from Wood Island and Kenai were purchased in Missouri in 1906, when the stock-breeding project was begun. They have all been brought together as a matter of economy, and, while a number have been sold and others have died, there were at the beginning of the present fiscal year 82 head of pure-bred Galloways and about a dozen head of grade cattle. Some work has been done at this station with sheep, and the 40 head of the original flock in 1910 have increased to about 80. During the past two years all of these animals have been wintered almost exclusively on native forage, either silage or hay, about 100 tons of each having been made each year from wild grasses. In 1909 and 1910 the cattle grazed until the middle of December, and they were fed from that time until May, when the beach grass afforded some grazing. By June 10 the pasturage was good, and all stock fattened rapidly. The Galloway cattle have proved well adapted to the coast region, and it is planned to give them a trial in the interior as soon as possible. The only stock kept at the Rampart and Fairbanks stations are horses, and no trouble has been experienced in making sufficient hay for them.

As a result of 10 years' active work this Department believes in the possibility of developing an agriculture for Alaska that will be comparable with that of Northern Europe, where conditions are somewhat similar, such as in parts of Norway, Sweden, Finland, and Russia. It is believed that agriculture will supplement any other industry that may be developed in Alaska, and it is possible that ultimately oats and barley can be grown in sufficient quantity to supply not only local demands, but a surplus for exportation. It is probable that stock raising can be made a success and dairying become profitable, as the period of winter feeding and protection is not much if any longer than is now required in many other regions where these industries are carried on.

The Department expects to continue its investigations and extend them as rapidly as its resources will allow, so as to be in a position to give definite advice on all agricultural and horticultural matters relating to the Territory.

Sincerely, yours,

James Wilson,
*Secretary.*

# REPORT OF THE COMMISSIONER OF THE GENERAL LAND OFFICE.

# REPORT OF THE COMMISSIONER OF THE GENERAL LAND OFFICE.

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DEPARTMENT OF THE INTERIOR,
GENERAL LAND OFFICE,
*Washington, D. C., October 7, 1911.*

SIR: The following report of the work in the General Land Office for the fiscal year ended June 30, 1911, and recommendations for change in legislation are respectfully submitted:

## GENERAL STATEMENT.

Applying the test of the number of patents written as a criterion of the amount of work performed in the Washington office, it is found that slightly more was accomplished in the past year than for the fiscal year ended June 30, 1910; the total being 72,189 patents issued as against 72,080 for 1910. The majority of the most important lines of the work in the office is up to date, and the other branches are rapidly being made so. In homestead applications patents are being issued within four and a half months from the date of proof where no protest is made or contest initiated. The same is true in cases of timber and stone and desert lands. Every effort will be made to maintain the position and to bring up to date the few branches in which the work is still somewhat behind. With the hearty spirit of cooperation shown by the employees of the office, there is no doubt that this can be done in the ensuing year.

The correspondence of the office still continues to be very voluminous. During the past year there were received 368,300 letters, necessitating the writing of, in round numbers, 252,000 answers, circulars being sent to the remainder.

## CASH RECEIPTS AND EXPENDITURES.

The total cash receipts from the sale of public lands, including fees and commissions on both original and final entries, for the fiscal year 1911, were $7,245,207.69. Miscellaneous receipts were as follows: From sales of Indian lands, $2,822,600.71; reclamation water-rights charges, $892,414.29; sales of timber in Alaska, depredations on public lands, sales of Government property, and copies of records and plats, $129,704.91, making the aggregate total of cash receipts of this bureau during the fiscal year 1911, $11,089,927.60, a decrease of $373,996.46, as compared with those for the fiscal year ended June 30, 1910.

The total expenses of district land offices for salaries and commissions of registers and receivers, incidental expenses, and expenses of depositing public moneys during the fiscal year ended June 30, 1911, were $870,242, a decrease of $3,395.33. The aggregate expenditures and estimated liabilities of the public-land service, including expenses of district land offices and surveys, were $3,195,759.38, leaving a net surplus of $7,894,168.22.

## AREA OF LAND ENTERED AND PATENTED.

The total area of public and Indian land originally entered during the fiscal year ended June 30, 1911, is 17,639,099.54 acres, a decrease of 8,752,169.55 acres as compared with the area entered during the year 1910.

The area patented during the fiscal year is 12,272,495 acres, an increase of 1,289,345 acres as compared with the fiscal year 1910. The number of patents issued during the fiscal year 1911 exceeded that of 1910 by 109. Of the above area 5,301,686 acres were patented under the homestead law.

## ORGANIZATION.

In a prior report attention was called to the fact that the statutory organization of the General Land Office proceeds along entirely erroneous lines, in that the "commissioner is supposed to supervise the special agents in the field and keep track of the work which they perform and the manner in which they are attending to the more important cases which will have to be presented to him subsequently for his consideration." I did not, prior to this report, have occasion to give the matter as deep consideration as it deserved. I have, however, during the past year given considerable thought to this matter.

A careful consideration of the history of the legislation passed for the purpose of creating the position of commissioner and imposing duties upon him will convince any student that, owing doubtless to the fact that the attention of Congress has not been brought to the matter, the present organization is unsuitable. It is virtually the same organization which existed under the statutory provisions passed in 1785, as amended by the act passed in 1796, and by the act of May 10, 1800, when the paramount idea was the sale of the lands, after survey, and collection of the money received from the sale. These funds were considered an asset to liquidate the public debt. When, by legislation, continuing from 1840 down to the present time, there were demanded certain prerequisites other than the payment of money on the part of the claimant, the General Land Office had cast upon it the duty of determining in a judicial manner whether these prerequisites had been complied with or not.

It would have been reasonable to presume, when new duties of an entirely different character to those originally cast upon the bureau were placed upon it, that Congress would at the same time have so changed the organization of the office as to enable the bureau head to adequately meet the new responsibilities. This has not been done. The number of clerks in the bureau itself has, of course, from time to time, been increased, but the only additional strengthening of the head of the bureau has been by the appointment of an assistant commissioner, under the act of July 7, 1884 (23 Stat., 186)—

> who shall be authorized to sign such letters, papers, and documents, and to perform such other duties as may be directed by the commissioner, and shall act as commissioner in the absence of that officer or in case of a vacancy in the office of commissioner.

While Congress has placed these quasi judicial duties upon the office, it has not met the situation which it created, by giving the Land Office responsible officers with authority vested in them by law to pass upon these quasi judicial questions and assume the responsibility of their actions. This could have easily been done by the creation, by legislation, of a law board, with authority in the members to sign their own decisions, and the responsibility of the commissioner for the proper execution of the laws in no way diminished, by retaining in him the supervision over the decisions of the members of the law board. An organization of this kind would have strengthened the office immeasurably, and the signature of the member of the board who might pass upon a question would mean that his personal consideration had been given to it. As it is, with the number of decisions and papers that have to be signed by the commissioner and assistant commissioner, a very great number must necessarily be signed in a perfunctory fashion. By creating a board of five members, one of them being the assistant commissioner, there would be established a responsible force of sufficient magnitude to personally consider the cases submitted to it, and claimants would realize that their claims had received the personal consideration of the officer whose signature was attached to the paper determining his rights. By retaining the supervision in the commissioner the broad administrative policy of the office would be preserved in the Executive, while the determination of each case on its merits would have the consideration of a judicial officer.

## EXECUTIVE DUTIES OF COMMISSIONER.

Upon the head of the General Land Office there are cast executive duties as numerous and diverse as those of any other bureau officer in the Government service. He has directly under him over 2,000 employees. The work which he is to superintend is scattered over an area extending, in effect, from Nome, Alaska, in the northwest, to Gainesville, Fla., in the southeast, and it is distributed among 103 land offices, 13 surveyors general offices, and 12 field divisions, with an immediate force of some 500 employees in Washington City. There is collected by the General Land Office, in round numbers, the sum of $10,000,000 a year from the sales of public lands. The money appropriated by Congress for the conduct of the work in this bureau last year was $3,417,212.82.

It will be readily seen that if the head of the office is to be, as he should be, in close touch with the executive work of the bureau and have knowledge of the method of and expenditure of money appropriated by Congress he has enough duties to occupy the attention of any one man.

To bring the matter more pointedly before Congress for its consideration, it may be briefly stated that upon the General Land Office is imposed:

First. The duty of surveying the public lands of the United States. Under legislation recently passed this work is now performed by this office directly by the engaging of surveyors, who act as employees of the office, and not by the old system of contract work. The expenditure under the old system was, in round numbers, $450,000 per annum, and placed upon the office a large weight of responsibility. The new system will entail closer supervision on the part of the General Land Office of the work done. The appropriation for the last fiscal year was $800,000. Of course, an executive officer has to depend upon the experts engaged for the superintending of this work, but he should have time and opportunity to devote considerable personal attention to it, inasmuch as he will be held responsible for the proper performance of this important duty.

Second. The duty of supervising the work of 13 surveyors general offices, where the notes are first transmitted by the surveyors in the field.

Third. The duty of superintending the disposal of the lands after survey. In its quasi judicial function the office has to see that the laws are properly obeyed under which the land is sought to be acquired. (The judicial duties will be enumerated later.) The executive duties call for the superintending of the proper organization of 103 district land offices, with the employment of 206 registers and receivers and 210 clerks. The commissioner, as head of the office, is responsible for the conduct of these offices and is held to account if the work in the various local land offices does not proceed smoothly. He has, as executive officer, to superintend the collection of moneys and see that the proper systems are installed, so that there will be a correct accounting for every dollar received for fees and commissions and for the sales of public lands.

Fourth. The duty of supervising the proper investigation of all alleged frauds and properly preparing and presenting all cases, whether they be before the local offices for the cancellation of entries on lands attempted to be secured without due compliance with law, or in the presentation of evidence before the courts in the conduct of criminal cases, and in the collection of evidence to be presented to a Federal court in civil proceedings looking to the cancellation of patents. The appropriation for this work for the ensuing fiscal year is $650,000, for the proper expenditure of which the head of the office is held answerable as administrative officer.

Fifth. As executive officer the commissioner is responsible for the proper conduct of the affairs of the General Land Office, with its force of some 500 employees in Washington, D. C. It is his duty to see that the work which is brought from the local land offices to the Land Office proper is properly conducted; that this force is properly divided, so that the various lines of work can be expeditiously and correctly carried to completion. This includes, as purely executive work, work in the surveying division, in the drafting division, in the division of files, and in the division which has charge of the writing and issuing of patents, and in seeing that the clerks in the judicial divisions properly attend to their duties. It has already been stated that the office receives over a thousand letters a day and writes and transmits nearly a thousand letters, exclusive of circulars. This is mentioned merely to bring to the front the weight of work of an executive character which the commissioner must attend in the offices in Washington.

Sixth. Congress has imposed on the General Land Office the executive duties in connection with the opening of the Indian reservations after completion of agreements with the Indians leading to the sale of their lands. This includes the sale of lots in towns established on abandoned Indian reservations. Under the provisions of laws as heretofore passed, where lands have not been entered within a certain length of time after the opening of the reservation, it becomes the duty of the commissioner to sell by auction the remaining lands unentered. There have been also placed upon the shoulders of the commissioner the duties of superintending the sale of timber in the Chippewa Reservation, Minn., which is to be disposed of for the benefit of the Indians. After the timber is so sold it is his duty to see that it is properly cut and scaled and that the moneys due thereon are collected and paid over to the Treasury for the use of the Indians.

There are numerous incidental administrative duties, such as the keeping of records of the establishment of national forests and other reservations of withdrawn lands, the creation of bird reserves, national monuments and the like, the collection of water-right charges on irrigation projects, the keeping of tract books, and the recording thereon of restorations and withdrawals.

Under acts of Congress authorizing and directing him to prepare and promulgate rules and regulations having the force and effect of a statute, to carry laws into effect, the commissioner acts in a line which approaches close to the legislative.

In the adjustment of railroad and other grants the Land Office has imposed on it duties which partake both of the judicial and administrative. This may also be said of the duties in regard to rights of way and easements over the public lands.

From this brief résumé of his duties as an executive officer the complexity, if not incongruity, of the additional duties imposed on the commissioner in personally passing upon quasi judicial questions is readily seen. He prepares the charge upon which the action is based. Agents acting under his direction collect the evidence and present it at the hearing which he orders, and officers subordinate or answerable to him preside at the trial, find the facts, and declare the law. Finally, upon the entire record of the cause so presented the commissioner or assistant commissioner must pass judgment. The duty of sitting as a judge to determine the question which he, as prosecuting attorney, presents, and the facts which he, as jury, found or may find, is frequently embarrassing.

There is no business firm in the country that would expect its executive head to take care of more work than that which is outlined above.

## JUDICIAL DUTIES OF COMMISSIONER.

The work which he and the assistant commissioner perform in their judicial capacity is such that it should command careful and personal attention. It should receive the undivided attention of at least four competent lawyers. These officers should act as members of a law board, with authority under law to pass upon matters requiring judicial interpretation submitted to the General Land Office for its consideration, retaining the supervision in the commissioner, and an appeal always lying to the Secretary of the Interior.

In order that the matter may be clearly laid before Congress, the following summary of the judicial duties is submitted:

## STATE GRANTS.

### SCHOOL AND INTERNAL IMPROVEMENTS.

The judicial duties imposed upon the Commissioner of the General Land Office arising from the administration of the grants to the States for the maintenance of common schools and for internal improvements are exceedingly onerous. While the school grants are made of specified sections, yet Congress has from time to time, by appropriate legislation, provided for the protection of settlers, who may have, prior to survey, established themselves upon the sections named in the school grant. In pursuance also of the established policy of the Government, mineral lands are likewise excepted from such grants. In other words, inasmuch as the grant is of specified sections, it does not take effect until survey and the status of the lands at that time determines whether they pass under the grant or not. Hence it becomes necessary to determine at that time all matters pertaining to such lands, whether by reason of settlement, or of the character of the lands, or of the fact that some prior claim may have been asserted thereto, which would exempt them from the granting power of Congress.

To cover deficiencies that may arise in the school grants, on account of settlement or other adverse claims, or the mineral character of the land, indemnity is provided to make up the quantity which otherwise would have passed under the grant in place.

The difficulties attendant upon the adjustment of the grant under these conditions are therefore apparent. First, the status of the lands in the field at the time the grant took effect must be passed upon. If it is found that certain lands included in the specified sections are for any reason excepted therefrom, and that indemnity must be taken therefor, it then becomes (second) necessary to ascertain the character and status of the lands that are chosen as indemnity.

The grants to the several States are not in the same terms, hence the rule that might apply in one State, or as announced by the court as applicable to one State, may not be decisive in the adjustment of a grant to another State. The duty then rests upon the commissioner to carefully ascertain the facts as to the lands in place, and those claimed as indemnity, and in adjusting the grant to so construe the statutes that the State shall receive the full amount of its grant without injustice to adverse interests.

Legislative provisions have been made, notably by the acts of 1893 and 1894, by which preference rights are given to the States to make selections under their several grants at the time when the surveys have been completed and the lands opened to selection. The determination of these preference rights in itself is a task of extreme difficulty, inasmuch as allegations of rights acquired prior to the State are constantly asserted, and must be settled before a final adjustment of the State's preference right can be determined.

### CAREY ACT SELECTIONS.

Very nearly akin to the grants just noticed are the provisions of the act of August 18, 1894, known as the Carey Act, authorizing certain States to select and have segregated arid lands to be reclaimed under direction of the States. The States are as follows:

Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah. Washington, and Wyoming. Under this act there have been segregated to these States 3,193,314.36 acres. The total area patented to June 30, 1911, amounts to 388,403.79 acres.

Under the terms of this act the State applies to the Land Department for a segregation of the lands that it proposes to reclaim. When the segregation has once been made the State has a period of not less than 10 years within which it may reclaim the lands. This period may, under the statute, be extended. While the reclamation of the lands and the disposition thereof, after they have been reclaimed and patented by the Government to the State, lies with the State, yet the adjudication as to whether the lands are of the character intended to be thus segregated under said act lies with the Land Department, and it is incumbent upon the General Land Office to pass upon not only the character of the lands but also the feasibility of the proposed reclamation scheme that the State submits to the department when it applies for the segregation of the land.

The importance of this can not be overstated, for not only will the lands remain segregated for a long period of time, if the order therefor is once made, but in making such segregation the department is practically committed to the feasibility of the proposition submitted by the State, and people thereafter dealing with the State are in a great degree entitled to regard the proposition of the State as having received the indorsement of the department.

All this must be carefully gone into at the time when the segregation of the lands is proposed by the State for its benefit, but later, when the State applies for a patent to the lands thus segregated, it is further necessary for the Land Office again to carefully inquire into the facts of the case, and adjudge whether in fact the lands have been reclaimed under the terms of the statute, before issuing a patent therefor.

The Carey Act in itself is brief in terms and not difficult of construction, but the questions that have to be determined in carrying it into effect involve some of the most difficult legal problems submitted to the department, and especially is this true in determining water rights claimed by appropriation under the State laws.

### RAILROAD GRANTS.

Railroad grants were originally made directly to the States for the purpose of aiding the construction of roads within such States, leaving it to the State to dispose of the lands in aid of the grant, as the roads were constructed, but the larger grants in later years were made directly to corporations authorized to receive the grant by act of Congress.

The immensity of these later grants does not need to be dwelt upon here. It is enough to say that there yet remains for adjustment under railroad grants an approximate claimed area of 29,000,000 acres. The grants to the railroad companies are usually made of alternate sections, but many exceptions are embraced in the grants, for the protection of the Government and settlers and all prior adverse interests. The lands of course so granted must be public lands subject to the grant at the time it takes effect.

For lands that are lost to the grant in place, indemnity is provided, and here again, as under the adjustment of State grants, a double duty is imposed upon the commissioner. He must ascertain the status of the grant in place and of the land claimed as indemnity. He must construe the statutes carefully for the protection of all interests confided to his charge, and no legislation has led to more litigation than that arising under railroad grants. This is necessarily so, because of the great interests involved by which the welfare of entire States and communities are affected, as well as individuals.

While it is true that the courts will not interfere with the action of the Land Department, so long as the disposition of title yet remains under its control, and also true that the courts recognize the findings of fact on the part of the Land Department to be final, yet they will correct errors of law that may occur in the adjudication of such title. Hence the responsibility rests upon the commissioner to so construe the law in the adjustment of these grants, that no occasion will arise in the courts to modify his action. Such modification might mean the loss of homes and fortunes to many people—a loss that could not be indemnified.

At every step in the adjustment of these grants, the Land Department is met with adverse rights asserted as against the grant—conflicting rights between different adverse claimants as against the grant—and it is required at the same time to carefully see that the land granted to the company is of the character subject thereto.

The obstacles encountered in the adjustment of such grants have been so manifest that Congress has, from time to time, by appropriate laws provided for special schemes of adjustment, as in the acts of 1887, 1890, and 1898. These acts in themselves, open an entirely new field of action, imposing the necessity upon the commissioner of most carefully considering not only the terms of the original grants, but the terms of the later acts as well.

## RIGHTS OF WAY—RAILROAD.

The right-of-way grants should not be overlooked in considering the judicial duties imposed upon the commissioner. By the act of March 3, 1875, railroad rights of way are granted over the public lands under certain conditions. The grants thus made do not carry the fee, but are a servitude upon the land that exists so long as the right of way is used for the purpose granted. Applications under this act not infrequently are presented by rival corporations. The opening of a new country to railroad enterprise brings into action competitive interests of the largest magnitude, and the fight over priorities to be secured by those first in the field is bitter and expensive to the parties. A mistake in the construction of the law so confided to the commissioner, in acting upon these rights-of-way applications, may bring financial disaster to a worthy enterprise.

### RIGHTS OF WAY—CANALS, DITCHES, AND RESERVOIRS.

By the act of March 3, 1891, rights of way are granted to individuals and companies for the maintenance of ditches, canals, and reservoirs upon public lands. This legislation was the outgrowth of the increasing demand for the conservation of our water supply in the semiarid regions. From the first this act has been eagerly invoked, both by individuals and companies, and the struggle for precedence in securing such rights of way has been exceedingly sharp.

In disposing of applications under this act it is necessary for the commissioner to ascertain the good faith of the enterprise, the financial soundness of the parties, and the availability of the proposed water supply. It is true that under this act the department in no wise attempts to pass upon water rights, but it does undertake to see that a mere paper right of way is not granted to cloud the title to our public lands, and operate as a bar to the prosecution of well-founded and legitimate applications under the act.

A right of way secured under this act is for the primary purpose of irrigation and is an easement, dependent upon the continued exercise of the privilege granted. Differing therefrom, however, is the right of way granted by act of February 15, 1901, which is in the nature of a permit or license to the use of a right of way through the public lands and forest and other reservations of the United States, for telephone and telegraph purposes, and for conducting and storing water for certain specified purposes in addition to those of irrigation—this right being subject to revocation by the Secretary of the Interior.

Though the right conferred by this act is not an easement, but subject to revocation, yet a proper administration thereof requires the utmost care in the recognition of rights claimed thereunder. This is apparent when it is remembered that the purpose of the act contemplates granting privileges upon which large investments of capital may be made and a revocation of the privilege, if due to any fault or oversight on the part of the Land Department, might result very disastrously.

## MINERAL LAND CLAIMS.

The several acts of Congress, under which title to mineral lands may be acquired, constitute a prolific source of litigation before the Land Department. The assertion of rights by adverse claimants under conflicting claims often involves immense values and calls for the very highest quality of judicial investigation and the exercise of the finest legal discrimination. Possessory rights, it is true, may be maintained to a mining claim without a patent therefor, but no large investments are likely to be made or invited until title from the Government has been obtained.

The procedure for securing patent, as provided by the mineral laws, is very exact in its requirements, and failure in any particular to follow the statute may entail serious consequences and heavy financial loss. Every step from the survey of the claim on the ground showing location of the claim, to the completion of the proof, involving notice to all conflicting claimants, must be carefully scrutinized in the General Land Office in the light of the statutory requirements and the construction they have received, both in the courts and the department. Countless questions of the most complex character constantly confront the office in the adjudication of these claims. Is the land mineral; is the substance claimed as mineral so recognized by mining authorities; has there been a discovery of such mineral sufficient in character to warrant the location of the mining claim; should the claim be in the form of a lode or a placer; has the claim been identified with accuracy on the ground; does such identification appear of record; have all prior valid claims been excluded; does the application for patent show clear abstract of title? These and many more questions must be settled even in an ordinary claim, but where the conflicts are numerous and the adverse claims sharply contested, the difficulties encountered in reaching a satisfactory solution increase in a manifold ratio. It may be fairly said that our mining laws alone present a wide field of jurisprudence for the exercise of the best legal talent on the bench, at the bar, and in the Land Department. The reports of our courts, State, Federal, and Supreme, attest the truth of this statement. The complexity of the laws under which a mineral patent is to be obtained and the immense values it often represents have been prolific in the production of mining engineers, mineral experts, mining lawyers, textbooks, and legal decisions, all to be heard and considered by the commissioner in the exercise of his quasi-judicial authority. In the consideration of these cases it is not an unusual thing for counsel to be heard orally, as well as by brief, and, in many cases, such hearings are attended by attorneys from the mining sections of our country at great expense to their clients, prosecuting the contest, in some cases, through a period of years before all the various interests have been finally adjudicated.

## COAL LANDS.

The general mining laws are not applicable to the disposition of coal lands, special legislation being provided therefor. The coal land laws embrace certain features of the old preemption law, in the matter of sale and the preference right of purchase, and other elements of the mining laws in the matter of discovery and development.

The right of one person or association of persons to purchase is limited in the matter of acreage, and the right once exercised is exhausted. The purpose of these restrictions is apparent—that is, to distribute the ownership of coal lands among as many individual owners as possible, and thus to try to prevent a monopolistic control of a valuable public asset, there being, however, no supervision of any kind retained in the Government after patent issued. This feature of the law has been a failure.

To so administer the law as to secure this result demands of the Land Department diligent attention to matters of statutory construction in considering applications to purchase these lands and prevent evasions of the law by which, either through dummy entrymen or other fraudulent devices, undue advantages under the law may be secured.

The legal difficulties heretofore encountered in the adjudication of cases under this branch of the public land laws bid fair to be largely increased by the recent acts of March 3, 1909, and June 22, 1910, recognizing the right to issue an agricultural patent for the surface of the land, while reserving to the United States the right to dispose of the coal thereunder.

## SETTLEMENT CLAIMS—HOMESTEAD.

The judicial duties imposed upon the Commissioner of the General Land Office in the construction of what are styled the settlement laws, meaning thereby generally agricultural claims, are exceedingly diverse and call for a very careful consideration of legislation which has been enacted through a period of many years. The principal one of these, known as the homestead law, originally enacted in 1862, since many times amended and modified, but still retaining the fundamental principle of providing a home for the permanent settler, deserves special attention. The law has been adapted to meet the necessities of certain localities, as the Kinkaid Act—limited to the State of Nebraska—the enlarged homestead act—limited to certain States containing semiarid lands—and the reclamation act, applicable to the lands entered under the act of June 17, 1902.

Under the general provisions of the law the exercise of the homestead right once exhausts the privilege, but several acts of Congress have granted the right to make second entries to people who through some specified cause have not enjoyed the benefit of the original entry. In handling cases that arise under the homestead laws, the most careful attention is exacted on the part of the General Land Office in ascertaining whether the entryman is fully qualified in the matter of citizenship, and other respects, to make the entry, and that the land is subject to such appropriation, and, later, that he has fully complied with the law in the matter of residence, together with improvements and cultivation of the land. All this must be done by trained experts acting under the immediate direction of the commissioner, whose duty it is to primarily see that the law is properly interpreted and applied. The number of homestead patents issued in the last fiscal year was 52,076, which will convey some idea of the amount of labor entailed in the administration of this one act.

### DESERT-LAND CLAIMS—WATER RIGHTS.

The desert-land act of 1877, as modified by the amendment of March 3, 1891, recognized the desirability of affecting the reclamation of desert land through the efforts of individual entrymen. At the time of the enactment of these laws there were many sources of water available to the individual of which he could take advantage and thus secure a water supply sufficient to irrigate the land covered by his entry. Like the homestead law, the exercise of the right once exhausted the privilege. It also was limited to persons duly qualified in the matter of citizenship, who at the time of entry were residents of the State in which the entry was made. The apparent purpose of these limitations was to prevent the misuse of the beneficent intention of the act by fraudulent and speculative combinations made with the purpose of obtaining unlawful control of large bodies of the public lands. It therefore becomes necessary for the Land Office, in the administration of this law, to carefully consider the good faith of the claim, whether the land is of the character subject to such entry, and, later, whether it has been reclaimed by securing a permanent supply of water sufficient to effect irrigation of the entire tract.

What constitutes land desert in character is largely dependent upon relative conditions, all of which must be taken into consideration in the adjudication of these claims. The most difficult question, however, is one pertaining to water rights. The Land Department must determine whether, under the laws of the State where the entry is made, the entryman has secured such a water right as will be appurtenant to the land and fully accomplish the intended reclamation. The value of water in States containing arid and semiarid lands has been recognized by appropriate legislation, under which all water rights must be adjudicated by the State authorities, and it is incumbent upon the Land Department, in passing to title a desert-land entry, to see that under such laws and adjudications the entryman has secured a permanent water right.

The gradual absorption of the water supply from the smaller streams by the individual entryman naturally resulted in the necessity of organizing water companies to bring water from a great distance, and this has led, in some instances, to relations between entrymen and water companies that require the utmost scrutiny to prevent the acquisition of large holdings through entries nominally made for the benefit of the individual, but actually in the interest of the company.

## TIMBER AND STONE ACT.

Attention should be also called to the important judicial duties resting upon the General Land Office in the matter of administering the timber and stone act of June 3, 1878. Public attention has of late years been so sharply directed to the necessity of preserving, so far as possible, the public forest lands that but little need be said here to emphasize the necessity of careful construction of the statutes that permit the purchase of these lands. Lands, though valuable for timber and subject to sale under this act, are also enterable under the homestead law. The result of this is that in the guise of homesteads valuable timber lands are sought, not for the purpose of securing a homestead, but the timber on the land. But inasmuch as the act of 1878 is limited to lands chiefly valuable for timber and unfit for cultivation, and the homesteader is required, in complying with the homestead law, to show cultivation, it becomes possible, by careful attention to conditions in the field and final proofs, to determine whether the entry was made in good faith and, if not so made, to prevent its consummation. So it will be seen that in the discharge of his duty the commissioner must determine the character of the land as well as disputes between rival claimants under the act itself, and also asserted rights under other adverse claims, and at the same time exercise a wise supervision over the entire subject in order that the interest of the United States may be protected in the handling of this valuable asset.

## PRIVATE CONTESTS.

One of the heaviest judicial burdens resting upon the General Land Office is the disposition of contested cases arising through the assertion of adverse rights by rival claimants to the same tract under the settlement laws or based on asserted priorities otherwise founded. In these cases it is usually a struggle between adverse claimants for the same tract of land; but in another class of contests, arising under the act of May 14, 1880, the contestant seeks not the assertion of a prior right to the tract, but a preference right to make an entry for the land in the event that he succeeds in securing the cancellation of the existing entry by showing that the entryman in some way has failed to comply with the law. As an illustration of the importance of this class of work, a case came before the Land Office not long ago said by the parties to involve half a million dollars. This case was heard orally before the General Land Office, the hearing occupying two days, at which time counsel of the highest ability, both local and resident at the place of controversy, were heard. Add to this the time necessary for the legal staff of the office to examine the evidence and briefs and prepare the decision, and the labor and responsibility incident to the determination of a case of this character may be easily understood.

Other cases of a similar character might easily be cited where large values are often involved, due to the fact that the land in dispute may lie near a growing town or for some other reason have a special value. Whether that be so or not, it in most instances represents the home of one of the parties, or a large part of his investment at least, for which he naturally contests with all the ability he may be able to call to his command. Whether he is represented by counsel or not, it is the duty of the General Land Office to examine carefully the record, reading and weighing the evidence and applying the law thereto, in order that justice may be done.

## SCRIP.

Rights asserted before the Land Department in the location of scrip and allied claims should not be overlooked in considering the judicial duties of the commissioner. While there yet remains but little of what may be defined as scrip, such as "Valentine," "Porterfield," and "Gerard" scrip, there is, however, a class of claims closely akin thereto, such as soldiers' additional homestead rights, forest lieu selections, and exchange rights under the acts of July 1, 1898, March 2, 1899, and April 21, 1904. Each of these presents in itself peculiar difficulties requiring the most careful judicial attention, involving frequently large values and great interests. The famous Hyde and Benson cases, yet pending before the courts, arose under the forest lieu selection act.

## ACTIONS IN CIVIL COURTS.

In the prosecution of cases before the courts on behalf of the Land Department for the recovery of title wrongfully obtained or for damages resulting from trespass on the public lands, it is incumbent upon the Land Department to carefully inquire into the various laws involved and to so present the cases to the Department of Justice by statements of fact and brief of legal authorities that it will be enabled to take prompt action thereon. This in many instances calls for the widest legal research, and the success or failure of the case is largely dependent upon the ability with which it is handled in the Land Department.

### REPAYMENT, APPEALS, ETC.

The act of June 16, 1880, and its amendments, provides for the repayment of money where entries have been erroneously allowed and can not be confirmed. To determine whether a claim for repayment should be allowed, it is necessary to consider the law under which the entry was made and ascertain whether it falls within the terms of the repayment act. During the last fiscal year there were stated 2,338 accounts, allowing repayment of $178,437.02, and during said period there were rejected 712 claims for repayment.

No extended mention can here be made of private land claims and special acts passed from time to time, or of a large variety of claims which incidentally arise in the Land Office, requiring the exercise of the judicial function.

In the exercise of its appellate jurisdiction during the last fiscal year, the General Land Office received and disposed of more than 7,000 cases, of which number more than 60 per cent of the decisions were final—that is, no appeal was taken from the action of the General Land Office to the Secretary of the Interior.

To enable the General Land Office to hear, consider, and decide, under an orderly procedure, the various matters confided to its judicial determination, rules of practice have been formulated. The attorneys practicing before the Land Department form a bar of specialists, learned in the law, the equal of any practicing before the courts.

As it exists now, the General Land Office, under an organization originally intended and equipped for executive duties alone, is required to perform judicial duties not often imposed upon a court of special jurisdiction.

### SUMMARY AND RECOMMENDATION.

It is impossible for the commissioner and his assistant to pay the judicial attention to these cases which they should receive. The bar practicing before this office has very little opportunity to submit its cases directly to those who are by law responsible for the decisions, because of the multitudinous duties placed on these officers. The head of the office can not find time to give individual attention to many of the most important cases which are submitted for his consideration; he has too many duties to attend which he can not detail to others because he alone by law can perform them.

It necessarily follows, therefore, that:

(1) The commissioner is an executive officer having jurisdiction over as many diverse duties as any other bureau officer in the Gov-

ernment, having directly under him at the present time some 2,000 employees.

(2) He is also a judicial officer, having the determination of cases great in number and of vast importance and over claims of great value, with one assistant commissioner.

As an executive officer the work over which he has jurisdiction is scattered over 103 land offices, 13 surveyors general, and 12 field divisions, with a force of some 500 employees localized in Washington, with a collection of, in round numbers, $10,000,000 a year and with the responsibility upon his shoulders of seeing that the work performed by this brigade of employees is properly done. From the standpoint of work alone this is sufficient for one man to be responsible for, but in addition he must, with the assistant commissioner, individually assume responsibility for the text of the numerous decisions rendered by the General Land Office.

Of the 526 employees in this office, 131 are graduate lawyers, and in addition there are about 150 employees who by experience are qualified to pass on matters of a quasi-judicial character. In other words, there are over 280 men in this bureau who are passing upon matters which require either a general legal knowledge or expert knowledge in the interpretation of certain laws. It can easily be seen, therefore, that it would be impossible to transfer to any tribunal of the ordinary organization the matters which come before this bureau for judicial determination. There can be no removal of these cases from the jurisdiction of the Land Office. The intelligent way is to give to a board of law review greater powers, namely, authority to decide, as a judicial body, matters before the General Land Office, under the supervision of the commissioner an appeal lying to the Secretary of the Interior.

I recommend, therefore, the enactment of legislation under which there should be created the position of five members of a board of law review, who should be given original jurisdiction upon all cases written by the various law clerks of this bureau under which rights of claimants are determined, with the right of review in the commissioner and appeal to the Secretary. The two duties, executive and judicial, will in this way be more adequately taken care of, as they should be, and it would be possible for the work to receive from the heads a more careful consideration than it does now. The commissioner as an executive officer could give personal attention to many important details for which he is responsible to which he can give only brief attention at present, and by the creation of the positions of five members of a board of law review with original jurisdiction all cases which are submitted to this office could receive closer and more careful attention than they do at present.

## SALARIES.

In connection with the organization and the changes which have been suggested, it is my duty to call attention to the inadequacy of the salaries paid to the higher employees of the General Land Office. The résumé of the character of the work to be performed, as set forth above, shows very plainly its importance, both in character and in results. One chief of division, namely, that of surveying division, receives $2,750; the chief clerk receives $2,500; the chief law clerk receives $2,500; one chief of division, $2,400; two members of the board of law review receive $2,200 and two $2,000 each. In addition to these there are only 27 employees receiving $2,000 each, only 37 receiving $1,800 each, and 69 receiving $1,600 each. There are employed in the General Land Office 131 men who are graduates in law, and it is of the greatest importance that this number should be increased and the vacancies in the office recruited from professional ranks in order that the work may be properly performed. It is evident, therefore, that not only are the higher grade employees underpaid but that, because of the inadequacy of the amount of salaries, there is not sufficient inducement to the right class of men to enter the General Land Office service. The policy is a poor one, and in my opinion the Government suffers very materially. True economy is in the paying of adequate salaries and in this way attracting to the service men who are energetic and thoroughly competent to do good work for the Government and by their force and ability save the Government money and perform its work properly and intelligently. I can not lay too great stress upon this matter. There should be places under the civil service in this bureau paying $4,000 per annum, $3,500, and $3,000 per annum, and the number of places from $1,600 to $2,000 should be increased. The ultimate effect of a step of this character would be greatly to the advantage of the Government.

## COAL LEGISLATION.

In my report for last year the following statement was made:

> It is imperative that new legislation be passed covering the disposition of coal lands in Alaska and in the United States. The inadequacy of the present laws is universally conceded. This proposition, therefore, needs no argument. The progress of advancement in the West is being retarded under present conditions by the difficulty in the successful opening of new mines under legislation as it exists to-day. Competition has been checked. The consumer is having to pay, therefore, a greater price than it would be reasonble to expect he would have to pay if it were possible to open new mines under legislation which would encourage the development of this resource. Legislation, however, which would not retain in the United States the right of supervision over the marketing of the product would be a mistake. To throw this resource open so that the coal deposits would ultimately pass into the hands of monopolies and trusts would be to render the conditions worse than they are at present. Congress, therefore,

should carefully guard the enactment of legislation and see to it that the requisite control is retained in the United States, so that a combination for the purpose of unjustly advancing prices can be checked through Government supervision.

The object to be obtained is the laying of this public necessity in the coal bins of the ultimate consumer at the cheapest possible price consonant with a due adherence to the principles of conservation.

Since the report was published no legislation has been enacted on this subject. There is as great necessity now as there was at the time of writing my last report for the enactment of legislation looking to the proper development of the coal fields of the West. A measure providing for the leasing of the lands under proper regulations seems to suggest the best means of meeting the situation, and it is to be hoped that Congress will enact some law along this line.

## WATER POWERS.

The same general theory should govern the enactment of legislation on the disposition of rights in water powers, namely, a guardianship looking to the supplying of the public needs at the cheapest rates. There is no destruction of supply in the use of water power.

## ALASKA.

During this year the office decided in cases regularly before it for adjudication the following important questions affecting the Alaska public coal lands:

(1) An agreement or understanding entered into between two or more persons that each person would enter and pay for 160 acres of Alaska coal lands and thereafter upon the acquisition of the title from the Government that all the parties would combine their claims into a single property for their common benefit was in contravention of the act of April 28, 1904 (33 Stat., 525), amending the Alaska coal land laws, and coal entries made pursuant to such an agreement and understanding were held for cancellation.

(2) Work done to ascertain merely the coal character of the land, and not with the intent to open and operate a mine, did not confer a preference right within the meaning of the act of April 28, 1904.

(3) The locator of a coal claim in Alaska must file notice of his location for record with the proper recording officer and also notice thereof with the register and receiver of the local land office within one year from the date of the location, and a failure to file for record such notice of location with the district recorder and also with the register and receiver within the year forfeits all rights under the location and requires the rejection of a subsequent application by the locator to enter the land.

(4) A location made and a declaratory statement filed for the land could not thereafter be changed upon the option of the locator;

an application for purchase presented by such person, who had made a prior location and without cause abandoned it, was held for rejection. While some of the questions above mentioned were not new in that the office had theretofore expressed an opinion thereon, they were all new in the sense that prior to the decision rendered during the present year none of the questions had been passed upon in a case regularly submitted for adjudication.

In a report made by the chief of the Alaskan field division on October 7, 1911 (time of writing this report), the total number of Alaska coal cases is given as 1,125; applications for patent filed, 521; notices of charges served, 172; answers to charges filed, 125; expiration notices served, 566; answers to expiration notices filed, 90; entries yet to be investigated as to good faith, 262. Up to July 1911, indictments returned in Alaskan criminal proceedings affecting coal lands covered 641 claims out of a total of 1,125 coal claims.

These particulars with reference to the Alaskan work are emphasized for the purpose of showing that there has been exceptional activity on the part of the agents in that field and a great deal of work accomplished by them. But notwithstanding this fact there still remains a great deal of work to be done in Alaska. Heretofore the reports have referred either to the Bering River coal field or the Matanuska coal field. Reports now coming in from the agents refer to (*a*) the Bering River coal fields, (*b*) the Matanuska coal field, (*c*) the Cook Inlet coal field, (*d*) the Alaska Peninsula coal field, (*e*) the Admiralty Island coal field, (*f*) the Nome district coal field, (*g*) the Fairbanks district coal field, (*h*) the Afognak Island coal field. It must be expected that a practically undeveloped territory, covering an area of over 500,000 square miles, will give rise to more work for the field service than that at present shown.

## ALASKA LAW OFFICER.

The laws relating to public lands as applied to Alaska are acknowledgedly inadequate. Such as they are, however, they must be enforced. It is not the province of the General Land Office to legislate. The best way to call attention to the inadequacy of legislation is to enforce the law as it exists. With the amount of work which arises out of the number of applications for lands in Alaska, it has been deemed wise to designate an officer of the board of law review to whom all applications for lands in Alaska are referred, of whatsoever nature they may be. In this way it is hoped to obtain perfect uniformity in decisions and interpretation of the laws such as they are. The place should be permanently established by legislation with an adequate salary attached thereto.

## PROOFS.

In the report of last year the following suggestions were made:

> At present proofs are taken before the register and receiver. This necessitates in many cases a long trip from the land to the local office and entails a large expense upon the applicant, who has to journey thereto and bring his witnesses to testify in support of his claim. If this course be not pursued, the proof is taken before a United States commissioner. There is attached to this course the expense of the journey to his office on the part of the claimant and his witnesses. Apart from this expense of the claimant the procedure is not satisfactory. The work of a special agent is largely that of investigating cases where false proofs have been made. It is respectfully recommended that a more expeditious way, and one where there would be less cost to the claimant, would be under a system allowing proofs to be taken upon the land itself, before a special agent designated to visit the land, who should be authorized to collect from the claimant a fee, the amount of which should be based upon the distance of the claim from some given point within the land district. The expenses of the agent could be so arranged that his visit would cost the claimant less, and the proof would be very much more satisfactory. There would also be a great saving in rendering unnecessary the expenses of a subsequent examination by a special agent to detect fraudulent proofs.

It is repeated with emphasis. By careful organization a system could be elaborated whereby the making of proofs could be simplified, promptness gained, and time saved. Much vexation is caused by the suspension of proofs on complaints made, and the charge has been made that the delays made pursuant thereto are not justified. It is unsafe to ignore complaints; there can be no forms established controlling the methods of making them; they do not come to the various field headquarters in any regular proportion to the proofs submitted; to maintain a force of agents large enough to keep pace with them when at their maximum would necessarily mean that many of the agents would have to be idle when the complaints dropped from the maximum to the minimum, and a larger appropriation of money would have to be demanded of Congress for the special agents' force; a waste of money and energy would ensue; all this could be obviated by the enactment of a law authorizing the procedure above recommended. If the proofs were taken on the homestead the facts would be established and the delay, now ensuing, of an investigation necessitated on account of the complaints made before or after the taking of the proof obviated.

## LOCAL LAND OFFICES.

### RECEIVER.

The recommendation made in the report for the fiscal year ended June 30, 1910, in regard to the abolishment of the office of receiver is renewed. A far better organization at less expense could be perfected. There is no business reason to be advanced for the retention of the present organization of local land offices. It originated in the era of sale, when the money value of the land disposed of was the paramount idea; it was retained without any real reason through the era of development; the coming era should see it abolished. The recommendation last year was as follows:

> The organization of the local land offices should be changed and a great deal of money saved, and better administration secured, by the abolition of the positions of register and receiver and the creation of one position in lieu of the two. The positions of registers and receivers were created under the original organization when the duties were those of sales agent and recording officer. By additional legislation, as stated above, the duties of local officers have been changed. Under this dual system there is a divided responsibility. The register and receiver have to sign decisions and they are responsible together for the work of the office. This divided responsibility is not a successful method of management for any office. Experience has shown that there are frequent clashes between the two officers. The simplest organization would be the creation of a new office and the placing of one man in charge of all the work of the local office, and substituting for the receiver a bonded clerk. This bonded clerk could be secured for the work to be performed at a salary ranging from $1,500 to $2,000 a year; and the difference between that and the salary now paid to receivers would amount in saving to the Government, in round numbers, to about $150,000 a year. Better administration would be secured, and the Government would save a considerable sum.

## HALL OF RECORDS.

The necessity of a Hall of Records is recognized. It is to be hoped that an appropriation will be made by Congress to provide this much-needed building. This was urged in the report for last year. The urgency of the erection of this edifice is realized more every year. It is to be hoped that it will be provided before some disastrous fire may have destroyed papers which can not be replaced.

## THE FIELD SERVICE.

On June 25, 1910, Congress appropriated the sum of $750,000 for the "Protection of public lands, timber, etc.," for the fiscal year ending June 30, 1911, which amount was to be immediately available.

The average number of special agents employed per month under this appropriation during the fiscal year was 155. From this appropriation were also paid the salaries of the clerks to the chiefs of field divisions and the necessary temporary employees in this office to properly handle the work incident to the large number of reports being received from the field.

The total amount of cash collected and turned into the Treasury as a result of the work of the special agents in the field during the fiscal year is $229,193.68. Of this total amount collected, $100,099.70 was accepted as settlement for timber trespass and $129,093.98 was recovered by civil and criminal actions brought through the Department of Justice in cases of timber trespass and fines imposed and paid in cases of conspiracy, perjury, subornation of perjury, and unlawful inclosures, etc.

As a result of investigations, 2,200,401.25 acres have been restored to the public domain. Of this total amount restored, 703,680 acres represent area of fraudulent entries (taking an average of 160 acres to each entry) canceled on special agents' reports; 1,475,381 acres restored to open range on abatement of unlawful inclosures; and 21,340.25 acres were restored through suits to cancel patents fraudulently acquired, brought by the Department of Justice, on the recommendation of this office based on special agents' reports.

Special agents have personally examined and reported on 26,505 entries, 10,022 of which were adverse and 16,483 were favorable. In addition to the reports of special agents, 90 adverse reports and 181 favorable reports have been received from forest officers on entries within national forests. Reports on applications for rights of way over the public domain for reservoirs, canals, ditches, etc., were rendered on 220 such applications, 60 of which were adverse and 160 were favorable. Reports have been received on 31 State segregation lists, under the Carey Act, on which final action has not yet been had.

Nineteen civil suits were recommended for the setting aside of grants of rights of way over the public domain for reservoirs, canals, ditches, etc. Investigations are now in progress involving all such grants heretofore approved for such purposes, with a view of bringing civil action against all grantees where the evidence shows misuse, nonconstruction, or abandonment of such privileges.

During the year 530 civil suits were recommended, 304 civil suits have been won and 82 have been lost, of which 141 timber-trespass cases were won, recovering $107,772.42, and 40 were lost; 74 suits to vacate patents were won, restoring 21,340.25 acres to the public domain, and 33 such suits were lost; and 79 cases of unlawful inclosure were won, restoring 893,015 acres heretofore held under fence unlawfully.

At the close of this fiscal year 482 cases wherein criminal prosecution was recommended were pending before the Department of Justice.

Of the criminal cases closed during the year, 31 were convictions for timber trespass, of which 6 were prison sentences, and $8,227 in fines were assessed by the court and $1,640.18 paid; 21 were convictions for conspiracy, 17 of which were prison sentences and $20,050 in fines assessed, of which $9,200 were paid; 8 convictions for perjury and 6 prison sentences, $1,900 paid; 47 were convictions for maintaining unlawful inclosures on the public domain, $4,377.60 fines were assessed and paid; and 17 convictions were secured in cases of intimidation, etc., making a total of 124 convictions secured and 47 prison sentences imposed.

## SURVEYING.

June 30, 1911, was the close of the first fiscal year under the direct system, and it is gratifying to be able to report that it has been an unqualified success. When the change of method from the contract to the direct system was first considered, it was expected that the cost of production would not be greater than that in the procedure which it was proposed to abandon. It was conceded that greater expedition would ensue and better work be accomplished, and this alone would have justified the change. The work of last season and this season, however, has shown that the average cost of survey of a township under the direct system is $750, or a saving of about $5 per mile, the average cost of surveys under the contract system being $15 per mile. As the number of miles surveyed during the past fiscal year will approximate 30,000, the saving to the Government, therefore, will be in the neighborhood of $150,000, this amount being available for the surveying of a larger mileage, thus greatly benefiting settlers in the West. There is in addition a saving from one to two years in time, counting from the time of the appropriation to the completion and adoption of the survey and the filing of the field notes in the surveyor general's office under the new system. This result has only been accomplished by the closest attention to economic equipment and means of subsistence of men and forage for animals, and by the employment of the best available engineers who have been engaged solely upon their past record for efficient services.

An important factor in minimizing the expense has been the purchase, where possible, of animals for transportation purposes. Great care has been used in selecting such stock as will be the most durable and efficient, taking into consideration the nature of the country to be surveyed and its climate. In one State the rate of hire for horses was found disproportionate to the value of the animals, and 36 horses were bought, at an average price of $85. These horses had saved for the Government in rent within three months after their purchase an amount equivalent to their cost at the rental asked by owners of horses of the same carrying capacity.

The instrumental equipment, which was at the date of the change of system very meager and necessitated the renting by the surveyors of their own transits, is now nearly complete, and all transitmen and surveyors are furnished with the most modern of solar instruments, thus securing the maximum of accuracy and expedition.

The iron corners now in use everywhere on public-land surveys are a considerable item of expense, but the universal praise given these monuments by settlers and interested parties justifies their employment wherever practicable to erect them. The main item is the expense of transportation from St. Louis to the outfitting point.

Invitations have been sent to manufacturing establishments in a number of large cities nearer the surveys to submit proposals for making these posts, but no favorable responses have been received. By shipping in carload quantities I have been able to reduce this expense, so that the freight charges have not averaged the past season over 20 per cent of the cost of manufacture.

The greater part of the force was taken from the ex-contractors, those whose work had been passed upon and found correct by examiners of surveys. They are not in the classified service, but examinations are to be held by the Civil Service Commission this winter, under which all unclassified transitmen or instrumentmen in good standing will be examined and duly certified to this office. All of the transitmen now in the service have signified their intention to take part, and it is believed an ample register of eligibles will be ready by the opening of next season.

During the past year the number of parties in the field have been increased to 115.

In addition to the surveyors, it has been necessary to maintain a force of 15 United States surveyors in examining surveys entered into by contract prior to July 1, 1910. This work, of course, will soon be brought to a finish. These surveyors were also engaged in executing fragmentary surveys, State boundary surveys, island surveys, etc.

In addition to the above force at work upon public-land surveying, this office, under existing regulations, undertakes the subdivision of Indian reservations for the purpose of allotment and subsequent opening for disposal to the public. The expenses for this work are, under the law, paid out of the appropriation for surveying and allotting Indian reservations. In this latter class of surveys it has been found possible, and in accordance with law, to perform not only the rectangular surveys but to do the topographic work in addition; the combining of the two has been shown to be more economical than by the detailing of special topographic parties to do this character of work after the rectangular survey has been completed. Under the laws now existing authority is not given to the commissioner to do the topographic work in conjunction with the township surveys. It is respectfully submitted that this authority ought to be given on grounds of business expediency and expedition; this especially so because of the demand in the West for the selection of lands for irrigation purposes under the Carey Act. A topographic survey made at the time of the rectangular survey would, without doubt, be of great assistance to those who desire to make Carey Act and other selections for the purposes of irrigation.

The office has received the heartiest cooperation from the surveyors general in the West in the installation of this new system, and a great deal of the success is due to the assistance and advice which have been received from these officers.

### ALASKA SURVEYS.

The duty of making subdivisional surveys in Alaska was assigned to this bureau during the last winter, and active preparations were set on foot to place as many parties in the field as the nature of the country and the demands of settlers would justify.

Three centers were decided upon at which to begin operations—Fairbanks, Chitina, and Seward. A double party, comprising a surveyor at the head of each party and an associate transitman in charge of an auxiliary party—in all, six parties—were equipped and received instructions the latter part of April in Seattle, leaving for the field early in May.

The Geological Survey had begun this work the previous year and had subdivided an area in the vicinity of Fairbanks. This region was occupied in May by a double party under this office and the sectionizing of the land continued. No report has yet been received of the acreage surveyed by them near this place, and only partial reports have come in as to the progress made by the other four parties.

However, a report has been received from Surveyor Warner of the work with this double party in the Copper River country, showing an area of 66,000 acres subdivided, and it is assumed that the other parties will have accomplished an equal amount before the season closes.

If this be correct, an aggregate output of 200,000 acres will be accomplished for the season's work, which, with the many difficulties to be encountered in that remote region, is submitted as an excellent result and one only to be accomplished by the most careful and energetic management.

Geodetic ties were made last year connecting two of the independent systems, and by the aid of an astronomer of the Coast and Geodetic Survey the remaining system (Copper River) was geodetically determined this year.

### TEXAS-NEW MEXICO BOUNDARY.

Congress having passed a resolution providing for the retracing and monumenting of the boundary line between Texas and New Mexico as surveyed by J. H. Clark in 1859, the work was assigned to this office and began in April last.

Two parties were put into the field on the east and south boundaries under the direction of one of the supervisors of surveys of this office, Arthur D. Kidder, and the work was vigorously prosecuted through the summer, with the result that at the time of writing this report, October 7, the field work was completed, which consists of careful retracing of the line as monumented by Clark, running the random lines between his corners (which were irregularly placed and very insufficiently marked, consisting as they did of only heaps of stones, rendering the identification extremely difficult), and afterwards establishing the true line between these points and erecting on the site of the old monuments very substantial cylindrical pillars made of cement and surmounted by brass caps firmly embedded in the cement, and suitably inscribed with the date of the reestablishment and the names of the two States. The commissioners appointed by Texas and the Government accompanied these parties.

In addition to the concrete monuments, of which 36 were set, mile corners were established, consisting of tubular iron posts flanged at the bottom, filled with cement, and capped with brass heads firmly riveted to the top and marked with the number of miles and the date of the reestablishment.

These metal monuments at the end of each mile were employed as the most desirable re-marking of the line that could be devised and are especially adapted to the character of the country. It is believed that the settlers upon the adjacent lands will have no difficulty in the future in identifying the exact location of the State line.

The hiatus between the thirty-third and thirty-fourth parallels, left unsurveyed by Clark, was closed by the establishment of an oblique line connecting the termini in accordance with the provisions of the joint resolution by methods agreed upon by the commissioners upon the ground.

This important work was authorized by Senate Joint Resolution No. 124, approved February 16, 1911, under the terms of which two commissioners, Hon. Francis M. Cockrell, appointed by the President, and Hon. Samuel R. Scott, appointed by the governor of Texas, supervised and directed the field operations.

The sum of $20,000 was appropriated by Congress for this work, and I am glad to state that the expense of reestablishing this 530 miles of line so completely and conspicuously monumented will not exceed the appropriation. This result has been attained by pursuing the most economical business methods in procuring supplies and in managing the prosecution of the work so that no time should be lost or needless expenditures incurred.

The instruments used on the work were loaned by this office, but aside from that the expense of the reestablishment, including the compensation of the commissioner on the part of the Government, has been paid from the fund provided by Congress except that on the south boundary the party in charge employed Government teams.

The field notes and maps are now being prepared in triplicate for the approval of the commissioners and acceptance by you, and thereafter filing in this office and those of the State and Territory interested.

## CAREY ACT.

A conservative estimate would indicate that there will be 4,000,000 acres included in segregation lists for Carey Act projects during the coming year. During the last fiscal year there were examined in the neighborhood of 1,650,000 acres of selections by the various Carey Act land States. There have already been withdrawn under the act of March 15, 1910, for Carey Act exploration and survey, 3,500,000 acres. While a small amount of this land will probably be relinquished, the greater part of it will be included in segregation lists during the coming year.

Under present practice investigation in the field of lands withdrawn for Carey Act projects is a very thorough one. Not only is the question of adaptibility for irrigation of the lands selected gone into very thoroughly, but the mineral character of the land is also investigated and the question as to whether or not sufficient rights can be obtained to provide water for the lands to be irrigated. The General Land Office has in its force competent engineers who are detailed to perform this duty. The records of the office show that their reports are exhaustive, and all the features necessary to protect the interests of the United States thoroughly covered. The necessity for this thorough investigation is amply shown by the difficulties which ensued from the insufficient examination made prior to the amended regulations now in force.

The work upon Carey Act projects heretofore approved is progressing rapidly in all directions, and it is an assured fact that a large number of lists for patent will be received during the coming year which, like the segregation lists, must be promptly investigated and reported upon. I have been informed by a number of Arizona people who are interested in the Carey Act that there is no doubt that the next legislature of that State will accept the provisions of the Carey Act as soon as possible after it convenes. It is also assured by them that at least 10 segregation lists are all ready for filing as soon as the State (or Territory) accepts the provisions of the act.

## RESERVOIR DECLARATORY STATEMENTS.

Owing to a recent decision of the department that where a reservoir under the act of January 13, 1897 (29 Stat., 484) covered only a portion of one or two smallest legal subdivisions, the applicant is not necessarily entitled to the full 160 acres unless it be shown that such amount is actually necessary for the support and maintenance of the reservoir, it has become necessary to call upon the field force to investigate the conditions surrounding these applications with a view to determining just how much it is necessary to segregate in connection with the reservoir. This is practically a new class of field examination, and will probably grow larger.

## RIGHTS OF WAY.

The work devolving upon the field force of investigating approved right-of-way applications under the acts of March 3, 1891 (26 Stat., 1095), May 11, 1898 (30 Stat., 404), February 15, 1901 (31 Stat., 790), and February 1, 1905 (33 Stat., 628), for irrigation, power, and other purposes, where the approvals are over 5 years old, with a view to obtaining forfeiture if not constructed, will be much heavier during the coming year than ever before. The field service will be called upon to investigate all approved right-of-way applications under the act of March 3, 1875 (18 Stat., 482), for the purpose of determining whether they have been constructed, and if not, whether they are forfeited under the act of June 26, 1906 (34 Stat., 482) and the act of February 25, 1909 (35 Stat., 647), and if found so subject to forfeiture, to clear the record of them.

## RAILROAD SELECTIONS.

The work relative to railroad selections for patent, either because the lands are within the primary limits of the grant, and are selected as indemnity for losses within the primary limits, or as an indemnity under the act of 1898, is constantly increasing. The work of the field service is augmented accordingly. The work is being increased not because more land is selected but because the lists are smaller. Heretofore a list of from 200,000 to 300,000 acres was a common thing and could be disposed of in large lists for patent; now the lists range from 40 to 1,000 acres usually. It is nearly as much work to investigate one 40-acre list, so far as the mechanical part of it is concerned, as to examine a 10,000-acre list. The field service naturally feels this, as in the examination of a large list the tracts are all contiguous and can be examined at the same time, while the examination of one 40-acre tract or 80-acre tract will take nearly as much time as is necessary to examine a 5,000-acre or 10,000-acre tract.

## RECLAMATION WORK.

The absence of precedents and the novel character of questions which have arisen in the administration of the reclamation act, have necessitated careful consideration by this office and close supervision by the local land officers. Much time has been given to instructing the local officers in the matter of collecting water-right charges, and executing the new water-right contracts, as well as the more general questions that have arisen.

A new form of contract for use in the sale of water for lands in private ownership has been adopted, intended to afford additional security to the United States, in the form of a direct lien on the lands irrigated; and the accounting system in connection with the payment of water-right charges under the reclamation act has been revised to meet the changed conditions and the rapidly increasing collections.

### COLLECTION OF WATER-RIGHT CHARGES.

The law provides for the collection of water-right charges on lands within reclamation projects by the receivers for the local land offices, who deposit the same to the credit of the reclamation fund. In most instances the local land offices are considerable distance from the projects, and the department has permitted the payments to be made to the project engineer, who transmits the money collected to the local land office. The project engineer acts only as agent for the water users and the payments are not considered as made until the local land office has received the same. The water users are required to pay the cost of sending the money, so collected, by money order to the local land office.

In order that the project engineer may be informed at all times as to the right of any water user to the use of water, it is necessary for the local land office to send him copies of all notices requiring payments of water-right charges, receipts of payments, and all letters tending to affect the status of entries or water rights. Both the project engineer and the local land office keep accounts of water-right payments for the same project, and the General Land Office keeps separately complete records for all projects.

The work would be very much simplified by a provision of law authorizing a local reclamation official to collect the water-right charges, and deposit the same to the credit of the reclamation fund. The Reclamation Service could report to the General Land Office entries which should be canceled because of failure to pay the charges. This would relieve the Land Office of a large amount of work without very materially increasing the work of the Reclamation Service. It would be much more convenient for the water users, and also the local reclamation officials, being on the ground, are in possession of valuable information as to conditions of crops, individuals, and other matters affecting the time when payments should be required, which the Land Office can not obtain without special investigation.

### STATE SELECTIONS.

There were pending June 30, 1911, State and Territorial selections aggregating, in round numbers, 1,900,000 acres, practically all requiring examination in the field.

There were received during the year ending June 30, 1911, selections to the amount of 523,636.16 acres; and during the year ended June 30, 1910, selections to the amount of 1,406,326.31 acres were received.

Upon the admission of Arizona and New Mexico, they will be entitled to select 4,700,000 acres, the aggregate of their specific grants, in quantity, made by the enabling act of June 20, 1910. It has been the custom of new States, immediately upon their admission, and as soon as the machinery of the State government is in running order, to begin actively the selection of lands in satisfaction of their quantity grants. In addition, each of these two States, upon its admission, may make school indemnity selections to the amount of not less than 1,000,000 acres.

## FIELD EXAMINATION OF SELECTED LANDS.

As a safeguard against the acquisition of title to mineral and coal lands under grants of nonmineral lands provision is now made for field examination of indemnity school land and other State and Territorial selections.

In view of the fact that selections in satisfaction of these grants, except under the Carey Act, may not be made for lands withdrawn or classified as coal lands, or valuable for coal, and that a very considerable portion of these withdrawn and classified lands is of a class well adapted for purposes of selection, it is recommended that the provisions of the act of Congress approved June 22, 1910 (36 Stat., 583), be extended so as to authorize surface right selections in aid of common schools, and under specific grants in quantity for educational and other purposes. In this connection attention is respectfully called to a report made by the department August 9, 1911, on Senate bill 3116, Sixty-second Congress, first session.

## IMPERIAL VALLEY LANDS.

The adjustment and adjudication of claims in the Imperial Valley, Cal., is proceeding satisfactorily. About 800 patents have been issued to claimants who have shown bona fide compliance with the requirements of the laws under which their entries were initiated. The locations of all but two of the school sections, with reference to the plats of the resurvey of these lands, have been fixed by office decisions, subject, however, to review by the department on appeal. A large number of conflicting claims have been amicably adjusted and such further surveys as may be necessary, are to be executed during the coming winter by an official of this office.

## SWAMP LANDS.

This office continues to receive and dispatch a considerable volume of work in connection with the adjustment of the swamp-land grants made to the several States by the acts of Congress approved March 2, 1849 (9 Stat., 352), September 28, 1850 (9 Stat., 519), and March 12, 1860 (12 Stat., 3).

On March 29, 1911, it disposed of a controversy of considerable importance, the parties to which were the State of California on one hand, and settlers to the number of 100 or more on the other side, and involving 99,840 acres of land, situated in the valley of the Colorado River, about 200 miles southeast from the city of Los Angeles. The State of California asserted its title to this land by virtue of the swamp-land grant, which claim of title was resisted by the settlers, who claimed that the lands were not, and never had been, of the character of lands embraced by that grant. The decision of this office sustained the claims of the settlers.

On February 19, 1909, the department gave direction for an examination in the field whereby to determine the character of lands in the Chippewa Indian Reservation, in Minnesota, in so far as any of said lands were being claimed by the State of Minnesota under the grant of swamp lands made to it by the act of March 12, 1860 (12 Stat., 3). The claim of Minnesota to swamp lands not within an Indian reservation is tried and determined by an inspection of the field notes of the Government survey, and the method thus adopted for an adjudication of her claims to land within the Indian reservation was a departure from the practice followed in other cases. This change of method had effect to let in numerous settlers upon lands within said reservations to contest the State's claim, and about 150 such contests have been filed in the local land offices at Cass Lake and Crookston. With few exceptions, this office has granted and directed hearings to be held in these contests, and the results of these hearings are now being reported.

It is believed to be appropriate in this connection to refer to the related matter of the "Arkansas sunk lands," determined by the department, by its decision of December 12, 1908, to be public lands of the United States, as a consequence of the compromise agreement between the United States and the State of Arkansas, approved by the act of Congress of April 29, 1898 (30 Stat., 367). The survey of these lands is being prosecuted with all possible expedition, and it is anticipated that the plats will be completed, approved, and filed some time early in the year 1912, and said lands soon thereafter duly made subject to disposition under the public-land laws.

## NATIONAL FORESTS.

Since the issuance of the last annual report, one national forest has been established under section 24 of the act of March 3, 1891 (26 Stat. L., 1095), and four new administrative units have been formed by subdividing certain national forests, with additional areas from the public domain in some instances. Forty-three national forests have been enlarged and 61 reduced under the act of June 4, 1897 (30 Stat., 36), and the San Luis National Forest has been consolidated with the Santa Barbara National Forest in California. The Pocatello National Forest, in Idaho, was enlarged by act of February 18, 1911 (public, 390), and by Executive order of May 31, 1911, the Fort Wingate Military Reservation was included in the Zuni National Forest, in New Mexico. There are now 153 national forests, embracing 190,608,243 acres. The decrease in area of national forests since the beginning of the fiscal year is 2,322,954 acres, due in part to the elimination of lands therefrom and in part to the revision of areas to conform to recent surveys and computations.

During the fiscal year, 4,598,705 acres have been excluded from the national forests, by reclassification or otherwise, and the unappropriated public lands in 4,125,405 acres thereof restored to settlement and entry. Areas temporarily withdrawn but not needed for forestry purposes are released from withdrawal upon the recommendation of the Secretary of Agriculture. Since the issuance of the last annual report 2,653,534 acres have been released from such withdrawal and the public lands therein opened to settlement and entry.

During the fiscal year 18 ranger stations, embracing 1,678 acres, have been withdrawn by Executive order under the act of June 25, 1910 (36 Stat., 847), for use by the Forest Service in the administration of the national forests, one right-of-way site and 162 administrative site withdrawals have been revoked, embracing 24,113 acres. There are now 24 rights of way for wagon roads and 3,983 administrative sites withdrawn, embracing 570,848 acres, 153 sites and 21,632 acres being near and 3,830 sites and 549,216 acres in the national forests.

## NATIONAL MONUMENTS.

Under authority of the act approved June 8, 1906, the President, during the year, by formal proclamations prepared, created the following monuments from lands under control of the United States:

Colorado National Monument, Colorado, exhibiting extraordinary examples of erosion, of considerable scientific interest.

Devils Postpile, California, including Rainbow Falls, within the Sierra National Forest, and under the jurisdiction of the Department of Agriculture.

The Lewis and Clark Cavern, Montana, was also more definitely located, by a second proclamation, and the boundaries of the Petrified Forest, in Arizona, were materially reduced.

There is great need of funds for the proper protection and administration of such of the national monuments, created out of the public lands, as consist of or include within their boundaries historic and prehistoric ruins, or other objects easily injured or destroyed by vandals, and unauthorized collectors of curios for sale or exhibition for a fee. The former departmental estimate of $5,000, which has failed to receive the approval of Congress, should by all means be renewed.

## HOMESTEAD ENTRIES IN FOREST RESERVES.

In accordance with the provisions of the act of June 11, 1906 (34 Stat., 233), notices were issued during the past year in 2,153 lists, by which approximately 215,300 acres of agricultural lands in national forests were opened to settlement and entry under the homestead laws.

## SALES OF ABANDONED MILITARY RESERVATIONS.

The lands in Fort McKinney abandoned military reservation were offered for sale on January 18 and 19, 1911, under the provisions of the act of July 5, 1884 (23 Stat., 103), and there were sold 11,557.92 acres for $25,128.11, an average of $2.17 per acre.

On November 21, 1910, there were sold under the same act 22 lots having an area of 213.61 acres, in the Fort Davis abandoned military reservation, Texas, the price realized being $2,272.50. or an average of $10.63 per acre. The lands in the Camp Bowie abandoned military reservation, Arizona, were offered for sale on June 20, 1911, and 2,408.81 acres were sold under said act for $4,281.32 an average of $1.77 per acre. Portions of all of these reservations were unsold and will be offered at some time in the future, when there is prospect of securing bidders therefor.

## POWER-SITE RESERVES.

Pursuant to the provisions of the act of June 25, 1910 (36 Stat., 847), 196 withdrawals have been made for power-site purposes, and there are now withdrawn for said purpose 1,510,647 acres, embracing lands in twelve States and Territories. These lands are subject to all of the provisions, limitations, exceptions, and conditions of the act cited.

## AGRICULTURAL ENTRIES ON LANDS BEARING OIL, PHOSPHATE, AND NATURAL GAS.

Bills are now pending consideration by Congress which will in some measure make oil, gas, and phosphate bearing lands available for appropriation by agricultural entrymen. The bill S. 3045 (62d Cong., 1st sess.) provides for disposal of oil-bearing lands in the same manner as lands valuable for coal are disposed of under the act of Congress approved June 22, 1910 (36 Stat., 583), while the bill S. 1587 (62d Cong., 1st sess.) provides for an absolute reservation of all phosphate, asphaltum, oil, and natural gas in the public lands of the United States, including lands in Alaska, leaving, by implication at least, the surface free to disposal under laws providing for agricultural entries. The department has heretofore submitted a report favorable to the first-above mentioned bill, after some suggested amendment has been effected. One of these proposed amendments would make the provisions of the bill operative as to lands containing phosphate and natural gas, as well as to lands containing oil, the only exception being as to lands valuable on account of the superficial deposits of phosphate rock.

I am of the opinion that the propriety and wisdom of such legislation as would thus be accomplished is scarcely debatable, and its early enactment would afford relief to a very considerable number of persons who have gone upon lands of that character prior to any withdrawal thereof for classification purposes.

## INDIAN ALLOTMENTS.

It is estimated there are pending Indian allotments aggregating about 4,500, requiring field examination. It is probable that about 800 to 1,000 may be received during the coming year.

## INDIAN-ALLOTMENT APPLICATIONS.

On April 4, 1911, I directed field examination and report with reference to timber, mineral, coal, phosphate, oil, power-site possibilities, the settlement of the Indian on the public domain, the character and approximate value of his improvements, etc., in all cases of Indian-allotment applications made under the provisions of section 4 of the act of Congress approved February 8, 1887 (24 Stat., 388), and acts amendatory thereof. Results under this order can not be reported as yet, but it is believed that it will result in rendering much more difficult the exploitation of public lands under guise of Indian claims and at the same time aid in the protection of bona fide Indian settlers.

## CREEK LANDS EAST OF THE MISSISSIPPI.

By the treaty of 1832, the Creek Tribe of Indians ceded to the Government all of their lands east of the Mississippi River, the United States engaging to allow 90 principal chiefs to select one section each and every other head of a family one-half section each, which were to be "reserved from sale for their use for the term of five years unless sooner disposed of by them." Twenty sections, in addition, were to be selected, under the direction of the President, for the orphan children of the Creeks, and divided and retained or sold for their benefit, as the President might direct. Articles 3 and 4 of this treaty are as follows:

> ART. III. These tracts may be conveyed by the persons selecting the same to any other persons for a fair consideration, in such manner as the President may direct.

The contract shall be certified by some person appointed for that purpose by the President, but shall not be valid until the President approves the same. A title shall be given by the United States on the completion of the payment.

ART. IV. At the end of five years, all the creeks entitled to these selections, and desirous of remaining, shall receive patents therefor in fee simple, from the United States.

A very large part of these selections remain unpatented. Such as the records show to have been sold by the Indians and the contracts of sale to have been approved by the President will be taken up and considered with a view to the issuance of patent, so that this matter, which has lain dormant for three-quarters of a century, may be closed.

There are a number of cases, however, where the records either do not show the sale to have been approved by the President or that the purchase money was paid, or do show that he disapproved it or that the purchase money was not paid; and in other cases this bureau has been informed that the local records in Alabama indicate that the Indian sold the land after the expiration of five years, when he was entitled to a patent, as provided in Article IV of the treaty.

The situation thus presented calls for speedy action by Congress. The lands involved have become valuable, and there appears to be much uneasiness and uncertainty in the minds of the present claimants to the lands.

## INDIAN RESERVATION OPENINGS.

During the last year there were 131 tracts, a part of lands formerly reserved and used in connection with the Cheyenne and Arapahoe School at Darlington, Okla., offered for sale under the provisions of the homestead laws, at public auction; 60 tracts were sold at an average of $38.60 per acre, 43 tracts at an average of $48 per acre, 16 tracts at an average of $66 per acre, and 10 tracts at an average of $67.20 per acre. This is the highest price at which lands were ever disposed of under the homestead laws.

Three hundred and four lots in the Timber Lake town site, in the Cheyenne River Reservation in South Dakota, were sold at public auction, and the amount bid for the same aggregated $79,581, the prices ranging from $25 to $1,400 per lot, which was greatly in excess of their appraised value.

In the town site of Dupree, in the Cheyenne River Reservation, S. Dak., there were sold 255 lots, the amount bid aggregating $46,615, the prices ranging from $40 to $1,200 per lot, an increase over their appraised value.

The unentered lands in the ceded portion of the Crow Reservation in Montana, and in the former Uintah Reservation in Utah, were offered for sale at public auction, and portions of them were sold at prices ranging from 50 cents to $20.50 per acre. The remainder of these lands were not sold because of lack of desirable bids.

## CHIPPEWA LOGGING, MINNESOTA.

During the past fiscal year there were logged under contracts on ceded Chippewa lands 80,005,150 feet of timber of the value of $572,830.73, against totals of 88,503,880 feet of timber, valued at $553,005.42, the preceding year.

On September 15, 1910, a sale of timber was held at Cass Lake, Minn., at which there were sold under the act of June 27, 1902 (32 Stat., 400), the timber on 118,362.98 acres, estimated to contain 51,310,000 feet of white pine, and 263,475,000 feet of Norway pine, the total amount of the accepted bids being $2,709,330.04, an average price of $8.59. This is the largest sale of Chippewa timber yet held, and the highest prices were realized.

All of the unsold pine timber on ceded Chippewa lands is to be offered for sale at Cass Lake, Minn., on October 21, 1911.

The "cut-over" lands, or lands from which all the timber has been cut, are opened to homestead settlement and entry from time to time, 45,779.12 acres of such lands having been opened to entry on August 22, 1911.

The following statement shows the amount of timber sold and the amount of the bids at the different sales, based on the original Government estimates, the amount of timber actually cut, and the price paid for the timber.

*Proceeds of Chippewa logging.*

| Dates of sales. | Government estimate (feet b. m.). | Estimated value. | Logged (feet b. m.). | Price paid. |
|---|---|---|---|---|
| Mar. 2, 1903[1] | 13,636,000 | $68,559.70 | 26,816,000 | $138,326.20 |
| Dec. 5, 1903 | 223,921,000 | 1,434,071.68 | 342,426,000 | 2,089,215.17 |
| Dec. 28, 1903 | 169,308,000 | 1,218,132.02 | 299,110,000 | 2,111,917,28 |
| Nov. 15, 1904 | 146,560,000 | 932,320.12 | 188,188,000 | 1,214,745.17 |
| Nov. 17, 1904[1] | 9,718,000 | 55,128.45 | 18,786,000 | 97,524.77 |
| July 17, 1907[1] | 2,056,000 | 18,705.05 | 3,754,000 | 34,160.52 |
| Mar. 15, 1910[1] | 2,169,000 | 15,378.69 | 3,559,000 | 26,885.96 |
| Sept. 15, 1910 | 319,785,000 | 2,709,330.04 | 21,597,000 | 188,634.21 |
| Special sales | 504,000 | 4,930.50 | 219,000 | 1,163.49 |
| Trespass | | | 2,687,000 | 22,640.61 |
| Interest, etc | | | | 8,029.03 |
| Total | 887,657,000 | 6,456,556.25 | 907,142,000 | 5,933,242.41 |

[1] Sale completed, all timber sold having been logged.

The trespass statement includes trespass on Indian allotments and State swamp selections.

The average price realized per thousand feet has been $6.51½.

The percentage of white pine has been nearly 64½ per cent.

The total expense of logging the past year has been $28,580.88, and the total expense to date has been $253,496.44, which is 4.3 per cent of the total receipts.

## LIEU SELECTIONS FOR LANDS IN INDIAN RESERVATIONS.

The act of April 21, 1904 (33 Stat., 211), provided for an exchange by an owner of private land over which an Indian reservation has been extended by Executive order, for vacant, nonmineral, nontimber, surveyed public lands of equal area and value and situated in the same State or Territory. Lieu selections of lands under this act have been made in the Zuni and Navajo Indian Reservations in New Mexico, and Moqui Indian Reservation in Arizona, aggregating 433,113.70 acres. Patents have issued on such selections for 237,545.88 acres, and selections for 1,703.51 acres have been approved by the Secretary of the Interior. In addition, selections of 42,360 acres have been recommended for approval, and selections for 151,504.31 acres are under examination.

## RELINQUISHMENTS.

The misuse of the relinquishment very often is the cause of an additional expense to the honest homeseeker, and prevents him from securing the right to enter a tract of land, because of an existant entry by some party, who has no intention of perfecting his claim, but who holds the land until he can get some one who will pay him to relinquish it back to the Government. Every possible method has been adopted under existing legislation to prevent the practice of trafficking in relinquishments. The greatest evil arises in the misuse of soldiers' declaratory statements. In three land offices in one State there were more than 3,000 soldiers' declaratory statements filed between May, 1910, and July, 1911. Less than 5 per cent of the declarants transmuted their declaratory statements; the remainder were made on the instigation of parties who have filed them for the purpose of compelling honest settlers to deal with them and pay money to secure a right which they should have without cost. Those who have trafficked in relinquishments have been indicted at various times, but it seems almost impossible to stamp out the evil.

The difficulty of legislating on this question is that there are, no doubt, many worthy cases wherein it would be a hardship to prevent in any way a man who is unable to perfect his entry from selling the improvements on his place to a homeseeker. I am of the opinion, however, that legislation could be enacted which would protect the honest homeseeker and would also put an end to this unwholesome trafficking in relinquishments. To that end, I have the honor to recommend that section 1, of the act entitled "An act for the relief of settlers on public lands," approved May 14, 1880, might appropriately be amended to require proof of the good faith of the entry sought to be relinquished, and that the entryman has actually resided upon the land and made valuable improvements thereon in all cases where the relinquishment is presented within one year from the date of the entry.

## SUMMARY OF PROPOSED LEGISLATION.

In summary of and addition to foregoing recommendations relative to new legislation, I would strongly urge the importance of statutory provisions covering and embracing the subjects now to be briefly enumerated and specified, as follows:

(1) To transfer to the Reclamation Service all duties pertaining to the collection and disposition of moneys due on account of building, maintenance, and operation charges, in connection with Government reclamation projects. This is the subject and object of a pending bill (S. 889) in reference to which a favorable report was submitted by the department under date of May 29, 1911.

(2) Entry for town site purposes of lands valuable for coal, oil, or gas, should be permitted, with provision whereby the Government will retain the title to the coal, oil, or gas contents of the lands so entered, in like manner as such deposits or contents are excepted from conveyance by the act of Congress approved June 22, 1910 (36 Stat., 583).

(3) Owing to the nonexistence of any common law of crimes which the Federal courts can administer, many forms of false swearing seem to be not punishable by proceedings in those courts. Attempted prosecutions for false oaths in relation to the character of the land of which entry is sought, or concerning the legal qualification of the would-be entryman, have failed of success because it was held that these oaths were not specifically required by statute. The facts bearing on these questions must always be ascertained by the department, and I earnestly recommend that this defect in the law be repaired.

(4) Registers and receivers are empowered by law (act of Congress approved Jan. 31, 1903, 32 Stat., 790) to issue subpœnas for witnesses in cases pending before them. They should also be empowered to require a witness to bring with him and produce papers, books, and documents in his possession and constituting material and important evidence in relation to any issue in the pending cause.

(5) The act of Congress approved January 31, 1903 (32 Stat., 790), does not prescribe the fees chargeable by officers before whom the depositions therein provided for are submitted. The provisions of this statute are very extensively availed of by the Government in

cases involving the validity of public land entries, and, owing to the varying statutes of the several States, and to the difference between these statutes and the Federal law relating to fees (act of Congress approved May 28, 1896, 29 Stat., 184), some considerable burden of inquiry has been imposed on the accounting officers of the Government, and some confusion in the practice and accounts of field officers has resulted. I recommend that the act of 1903 (supra) be so amended as to provide for uniform fees of 20 cents per folio of 100 words in every such deposition, and 10 cents per folio for every copy furnished a party to the cause, on his request therefor, with no other charge for or on account of administering the oath to a witness or preparing a certificate to complete the deposition. A minimum fee of $2 for the first deposition taken at the instance of any party to a cause should be permitted.

(6) The act of Congress approved January 13, 1897 (29 Stat., 484), providing for reservations of public lands as sites for stock-watering reservoirs, has ceased to be of any very considerable public advantage. On the contrary, it has for some time been a means whereby such reservations are procured for purposes foreign to the law. Very often it is employed to accomplish the reservation of lands until such time as the applicant for such reservation can qualify himself to acquire the legal title under some other law. In other cases it is obtained purely for speculative purposes and is placed upon the market immediately following accomplishment of the reservation, the reservoir claimant offering his relinquishment for sale. I respectfully recommend that this statute be promptly repealed.

(7) The several statutes providing for rights of way and easements for canals, ditches, telegraph and telephone lines, reservoirs, and other structures, are heterogeneous and wholly lacking in any uniformity of principle or rule in relation to the character of the interest or estate secured, and in respect of the duration of such interest or right. Some provision should be made whereby rights under these grants will terminate automatically at the expiration of a stated period of time, in the event of failure to construct the proposed works, or following nonuser or abandonment for a similar length of time. As the law now exists, the Government is unable to relieve the public land of the burden of these paper easements without resort to suit in a court of equity, whereby to obtain a decree of forfeiture. A similar provision for automatic forfeiture should be provided for rights of way granted to railroads by the act of March 3, 1875 (18 Stat., 472).

(8) The appropriation of $3,000, made by the act of Congress approved June 25, 1910 (36 Stat., 775–997), to be used in the preparation and publication of a revised edition of the Manual of Surveying Instructions, has not been expended, preparation of the revision

being unavoidably delayed by the urgency and volume of other lines of work. Considerable progress has been made in the execution of that object, however, and publication may soon be resorted to. I wish, therefore, to urgently recommend that said appropriation be continued and made available during and until the expiration of the fiscal year ending June 30, 1913.

(9) I wish to renew the recommendation heretofore presented in annual reports from this office, urging the repeal of section 2301 of the United States Revised Statutes, by which the residence and cultivation required of homestead entrymen may be commuted on payment of $1.25 for each acre of the entered lands after 14 months from the date of entry. It is unnecessary here to repeat the reasoning by which this recommendation has been justified, or to state the objectionable consequences of the practical operation of this statute.

(10) The attention of this office has been ofttimes invited to the evils and hardships resulting from the practices of incompetent and unscrupulous professional locators. Field-service representatives receive frequent complaints from persons who have been victimized by these gentry, representing that persons employed for a compensation to locate them upon desirable tracts of public lands had exhibited to them lands which afterwards proved to be not public lands or lands which were not of the description supplied to them. In most cases this misrepresentation is designed and intentional, while in a few it is the consequence of gross ignorance and total want of care or caution. It seems to me that these persons who intervene between the Government and the would-be settler upon public lands should be placed under some responsibility to the law and afforded some reason, other than a purely moral one, for keeping good faith with the settler by whom they are employed. I believe that this evil could be remedied by legislation along the line now to be suggested, as follows:

> Any person who, for a reward paid or promised to him in that behalf, shall undertake to locate an intending purchaser, settler, or entryman upon any public lands of the United States subject to disposition under the public-land laws, and who shall willfully, wrongfully, and falsely represent to such intending purchaser, settler, or entryman that any tract of land shown to him is public lands of the United States, subject to sale, settlement, or entry, or that it is of a particular surveyed description, thereby deceiving and intending to deceive the person to whom such representation is made, or who, without sufficient or any knowledge of the facts concerning the character and description of such lands, shall make such representation, and accomplish such deceit, shall be deemed guilty of a misdemeanor, and shall be punished by a fine of not exceeding three hundred dollars, or by imprisonment for a term not exceeding one year, or by both such fine and imprisonment.

Legislation of this character would appear to be subject to no constitutional objection. (United States *v.* Hall, 98 U. S., 343;

United States *v.* Fox, 95 U. S., 670; Frisby *v.* United States, 157 U. S., 160; United States *v.* Van Leuven, 62 Fed. Rep., 52.)

(11) The reservation made by the tenth section of the act of Congress approved May 14, 1898 (30 Stat., 409), for the purpose of providing a public roadway 60 feet wide along and parallel to the shore line of navigable waters in Alaska, should be continuous and unbroken if it is to be of any real value. For this reason, I recommend such amendment of section 26 of the act of Congress approved June 6, 1900 (31 Stat., 321), as will subject mining claims to the easement of that roadway. Such easement would not, of course, in any wise diminish the right of the mining claimant to extract minerals beneath the surface of the roadway, and would, on the other hand, greatly enhance the value of the wharves and landing places reserved by the tenth section of the act of 1898, supra, making them accessible from any and every point in the near vicinity thereof. Owing to the existence of streets and highways through and across town sites, the provision in the act of 1900, supra, exempting town-site entries from the reservation in question is not objectionable.

## GENERAL LAND OFFICE BUILDING.

Your attention is again invited to the condition of the floors in a very great majority of the rooms in this bureau. These are of slate and our experience with them has forced the conclusion that wooden floors alone will meet the requirements of this bureau. We have tried linoleum and have found that it is practically impossible to have the same laid in a manner that will prevent its curling up at the seams, thereby becoming dangerous to walk upon, and it does not wear sufficiently long to warrant further experiment with it. I understand that the department has planned to lay wooden floors in all the rooms of this office, those already laid being eminently satisfactory, and I urge that further effort be made to secure an appropriation necessary to install this needed improvement.

FRED DENNETT,
*Commissioner.*

The SECRETARY OF THE INTERIOR.

# STATISTICS RELATING TO THE DISPOSITION OF THE PUBLIC DOMAIN.

## *Area of States and Territories.*

[Based upon careful joint calculations made in the General Land Office, the Geological Survey, and the Bureau of the Census.]

| States or Territories. | Land surface. | | Water surface. | | Total areas. | |
|---|---|---|---|---|---|---|
| | *Sq. m.* | *Acres.* | *Sq. m.* | *Acres.* | *Sq. m.* | *Acres.* |
| Alabama | 51,279 | 32,818,560 | 719 | 460,160 | 51,998 | 33,278,720 |
| Arizona | 113,810 | 72,838,400 | 146 | 93,440 | 113,956 | 72,931,840 |
| Arkansas | 52,525 | 33,616,000 | 810 | 518,400 | 53,335 | 34,134,400 |
| California | 155,652 | 99,617,280 | 2,645 | 1,692,800 | 158,297 | 101,310,080 |
| Colorado | 103,658 | 66,341,120 | 290 | 185,600 | 103,948 | 66,526,720 |
| Connecticut | 4,820 | 3,084,800 | 145 | 92,800 | 4,965 | 3,177,600 |
| Delaware | 1,965 | 1,257,600 | 405 | 259,200 | 2,370 | 1,516,800 |
| District of Columbia | 60 | 38,400 | 10 | 6,400 | 70 | 44,800 |
| Florida | 54,861 | 35,111,040 | 3,805 | 2,435,200 | 58,666 | 37,546,240 |
| Georgia | 58,725 | 37,584,000 | 540 | 345,600 | 59,265 | 37,929,600 |
| Idaho | 83,354 | 53,346,560 | 534 | 341,760 | 83,888 | 53,688,320 |
| Illinois | 56,043 | 35,867,520 | 622 | 398,080 | 56,665 | 36,265,600 |
| Indiana | 35,815 | 23,068,800 | 309 | 197,760 | 36,354 | 23,266,560 |
| Iowa | 55,586 | 35,575,040 | 561 | 359,040 | 56,147 | 35,934,080 |
| Kansas | 81,774 | 52,335,360 | 384 | 245,760 | 82,158 | 52,581,120 |
| Kentucky | 40,181 | 25,715,840 | 417 | 266,880 | 40,598 | 25,982,720 |
| Louisiana | 45,409 | 29,061,760 | 3,097 | 1,982,080 | 48,506 | 31,043,840 |
| Maine | 29,895 | 19,132,800 | 3,145 | 2,012,800 | 33,040 | 21,145,600 |
| Maryland | 9,941 | 6,362,240 | 2,386 | 1,527,040 | 12,327 | 7,889,280 |
| Massachusetts | 8,039 | 5,144,960 | 227 | 145,280 | 8,266 | 5,290,240 |
| Michigan | 57,480 | 36,787,200 | 500 | 320,000 | 57,980 | 37,107,200 |
| Minnesota | 80,858 | 51,749,120 | 3,824 | 2,447,360 | 84,682 | 54,196,480 |
| Mississippi | 46,362 | 29,671,680 | 503 | 321,920 | 46,865 | 29,993,600 |
| Missouri | 68,727 | 43,985,280 | 693 | 443,520 | 69,420 | 44,428,800 |
| Montana | 146,201 | 93,568,640 | 796 | 509,440 | 146,997 | 94,078,080 |
| Nebraska | 76,808 | 49,157,120 | 712 | 455,680 | 77,520 | 49,612,800 |
| Nevada | 109,821 | 70,285,440 | 869 | 556,160 | 110,690 | 70,841,600 |
| New Hampshire | 9,031 | 5,779,840 | 310 | 198,400 | 9,341 | 5,978,240 |
| New Jersey | 7,514 | 4,808,960 | 710 | 454,400 | 8,224 | 5,263,360 |
| New Mexico | 122,503 | 78,401,920 | 131 | 83,840 | 122,634 | 78,485,760 |
| New York | 47,654 | 30,498,560 | 1,550 | 992,000 | 49,204 | 31,490,560 |
| North Carolina | 48,740 | 31,193,600 | 3,686 | 2,359,040 | 52,426 | 33,552,640 |
| North Dakota | 70,183 | 44,917,120 | 654 | 418,560 | 70,837 | 45,335,680 |
| Ohio | 40,740 | 26,073,600 | 300 | 192,000 | 41,040 | 26,265,600 |
| Oklahoma | 69,414 | 44,424,960 | 643 | 411,520 | 70,057 | 44,836,480 |
| Oregon | 95,607 | 61,188,480 | 1,092 | 698,880 | 96,699 | 61,887,360 |
| Pennsylvania | 44,832 | 28,692,480 | 294 | 188,160 | 45,126 | 28,880,640 |
| Rhode Island | 1,067 | 682,880 | 181 | 115,840 | 1,248 | 798,720 |
| South Carolina | 30,495 | 19,516,800 | 494 | 316,160 | 30,989 | 19,832,960 |
| South Dakota | 76,868 | 49,195,520 | 747 | 478,080 | 77,615 | 49,673,600 |
| Tennessee | 41,687 | 26,679,680 | 335 | 214,400 | 42,022 | 26,894,080 |
| Texas | 262,398 | 167,934,720 | 3,498 | 2,238,720 | 265,896 | 170,173,440 |
| Utah | 82,184 | 52,597,760 | 2,806 | 1,795,840 | 84,990 | 54,393,600 |
| Vermont | 9,124 | 5,839,360 | 440 | 281,600 | 9,564 | 6,120,960 |
| Virginia | 40,262 | 25,767,680 | 2,365 | 1,513,600 | 42,627 | 27,281,280 |
| Washington | 66,836 | 42,775,040 | 2,291 | 1,466,240 | 69,127 | 44,241,280 |
| West Virginia | 24,022 | 15,374,080 | 148 | 94,720 | 24,170 | 15,468,800 |
| Wisconsin | 55,256 | 35,363,840 | 810 | 518,400 | 56,066 | 35,882,240 |
| Wyoming | 97,594 | 62,460,160 | 320 | 204,800 | 97,914 | 62,664,960 |
| | 2,973,890 | 1,903,289,600 | 52,899 | 33,855,360 | 3,026,789 | 1,937,144,960 |
| Alaska | | | | | 590,884 | 378,165,760 |
| Guam | | | | | 210 | 134,400 |
| Hawaii | | | | | 6,449 | 4,127,360 |
| Panama Canal strip | | | | | 474 | 303,360 |
| Philippine Islands | | | | | 115,026 | 73,616,640 |
| Porto Rico | | | | | 3,435 | 2,198,400 |
| Tutuila Group, Samoa | | | | | 77 | 49,280 |
| Total | | | | | 3,743,344 | 2,395,740,160 |

Owing to their location adjoining the Great Lakes, the States enumerated below contain approximately an additional number of square miles as follows: Illinois, 1,674 square miles of Lake Michigan; Indiana, 230 square miles of Lake Michigan; Michigan, 16,653 square miles of Lake Superior, 12,922 square miles of Lake Michigan, 9,925 square miles of Lake Huron, and 460 square miles of lakes St. Clair and Erie; Minnesota, 2,514 square miles of Lake Superior; New York, 3,140 square miles of lakes Ontario and Erie; Ohio, 3,443 square miles of Lake Erie; Pennsylvania, 891 square miles of Lake Erie; Wisconsin, 2,378 square miles of Lake Superior and 7,500 square miles of Lake Michigan.

In addition to the water areas noted above, California claims jurisdiction over all Pacific waters lying within 3 English miles of her coast; Oregon claims jurisdiction over a similar strip of the Pacific Ocean 1 marine league in width between latitude 42° north and the mouth of the Columbia River; and Texas claims jurisdiction over a strip of Gulf water 3 leagues in width, adjacent to her coast and between the Rio Grande and the Sabine River.

*United States district land offices.*

| Locations. | Established. | Opened. |
|---|---|---|
| Alabama: | | |
| Montgomery | July 10, 1832 | Jan. 1, 1834 |
| Alaska: | | |
| Fairbanks | May 14, 1907 | July 1, 1907 |
| Juneau | Apr. 2, 1902 | June 20, 1902 |
| Nome | May 14, 1907 | July 1, 1907 |
| Arizona: | | |
| Phoenix | July 25, 1905 | Oct. 2, 1905 |
| Arkansas: | | |
| Camden | Jan. 10, 1871 | Mar. 20, 1871 |
| Harrison | July 14, 1870 | Feb. 27, 1871 |
| Little Rock | Feb. 17, 1818 | Sept. 1, 1821 |
| California: | | |
| Eureka | Mar. 29, 1858 | July 24, 1858 |
| Independence | Apr. 22, 1886 | Mar. 22, 1887 |
| Los Angeles | June 12, 1869 | Sept. 22, 1869 |
| Redding | May 13, 1890 | July 15, 1890 |
| Sacramento | July 26, 1866 | Nov. 12, 1867 |
| San Francisco | Mar. 4, 1911 | May 1, 1911 |
| Susanville | Feb. 10, 1871 | Mar. 2, 1871 |
| Visalia | Mar. 29, 1858 | July 10, 1858 |
| Colorado: | | |
| Del Norte | June 20, 1874 | Mar. 22, 1875 |
| Denver | June 4, 1864 | Aug. 15, 1864 |
| Durango | Apr. 20, 1882 | Oct. 2, 1882 |
| Glenwood Springs | July 3, 1884 | Nov. 10, 1884 |
| Hugo | Feb. 6, 1890 | Sept. 7, 1890 |
| Lamar | Aug. 4, 1886 | Jan. 3, 1887 |
| Leadville | Apr. 5, 1879 | July 1, 1879 |
| Montrose | Jan. 4, 1888 | Sept. 1, 1888 |
| Pueblo | May 27, 1870 | Jan. 16, 1871 |
| Sterling | Feb. 6, 1890 | Aug. 1, 1890 |
| Florida: | | |
| Gainesville | June 8, 1872 | Apr. 30, 1873 |
| Idaho: | | |
| Blackfoot | Sept. 3, 1886 | Nov. 16, 1886 |
| Boise | July 26, 1866 | Jan. 13, 1868 |
| Coeur d'Alene | July 14, 1884 | Dec. 21, 1885 |
| Hailey | Jan. 24, 1883 | July 16, 1883 |
| Lewiston | July 26, 1866 | Sept. 26, 1871 |
| Kansas: | | |
| Dodge City | Dec. 20, 1893 | Feb. 3, 1894 |
| Topeka | July 24, 1861 | Sept. 10, 1861 |
| Louisiana: | | |
| Baton Rouge | Jan. 6, 1911 | Apr. 1, 1911 |
| Michigan: | | |
| Marquette | Mar. 19, 1857 | July 14, 1857 |
| Minnesota: | | |
| Cass Lake | Apr. 1, 1903 | July 1, 1903 |
| Crookston | Apr. 29, 1878 | May 5, 1879 |
| Duluth | Mar. 27, 1862 | Jan. 15, 1863 |
| Mississippi: | | |
| Jackson | June 23, 1836 | July 25, 1836 |
| Missouri: | | |
| Springfield | June 26, 1834 | Oct. 4, 1838 |
| Montana: | | |
| Billings | Feb. 5, 1906 | July 2, 1906 |
| Bozeman | June 20, 1874 | Oct. 5, 1874 |
| Glasgow | Feb. 25, 1907 | June 1, 1907 |
| Great Falls | May 8, 1902 | Aug. 1, 1902 |
| Havre | Mar. 15, 1910 | July 1, 1910 |
| Helena | Mar. 2, 1867 | Apr. 27, 1867 |
| Kalispell | Mar. 2, 1897 | July 1, 1897 |
| Lewistown | Apr. 1, 1890 | Nov. 26, 1890 |
| Miles City | Apr. 30, 1880 | Oct. 19, 1880 |
| Missoula | Apr. 1, 1890 | Apr. 20, 1891 |
| Nebraska: | | |
| Alliance | Apr. 16, 1890 | July 1, 1890 |
| Broken Bow | do | July 7, 1890 |
| Lincoln | July 7, 1868 | Sept. 7, 1868 |
| North Platte | Apr. 22, 1872 | Apr. 11, 1873 |
| O'Neill | Apr. 7, 1888 | July 16, 1888 |
| Valentine | June 19, 1882 | July 7, 1883 |
| Nevada: | | |
| Carson City | July 2, 1862 | Mar. 1, 1864 |
| New Mexico: | | |
| Clayton | Dec. 18, 1888 | Aug. 12, 1889 |
| Fort Sumner | June 22, 1910 | Oct. 1, 1910 |
| Las Cruces | Mar. 10, 1883 | May 1, 1883 |
| Roswell | Mar. 1, 1889 | Dec. 9, 1889 |
| Santa Fe | May 24, 1858 | Nov. 24, 1858 |
| Tucumcari | Mar. 16, 1908 | July 1, 1908 |
| North Dakota: | | |
| Bismarck | Apr. 24, 1874 | Oct. 12, 1874 |
| Devils Lake | Mar. 3, 1883 | Aug. 24, 1883 |
| Dickinson | Mar. 16, 1904 | July 1, 1904 |
| Fargo | Dec. 29, 1873 | Sept. 1, 1874 |
| Minot | Sept. 26, 1890 | Oct. 1, 1891 |
| Williston | Apr. 26, 1906 | Aug. 1, 1906 |
| Oklahoma: | | |
| El Reno | July 4, 1901 | Aug. 6, 1901 |
| Guthrie | Mar. 3, 1889 | Apr. 22, 1889 |
| Lawton | July 4, 1901 | Aug. 6, 1901 |
| Woodward | Aug. 25, 1893 | Sept. 16, 1893 |
| Oregon: | | |
| Burns | June 1, 1889 | Sept. 2, 1889 |
| La Grande | July 3, 1866 | Nov. 15, 1867 |
| Lakeview | June 6, 1877 | Aug. 6, 1877 |
| Portland | Aug. 24, 1854 | Jan. 1, 1855 |
| Roseburg | Sept. 15, 1859 | Jan. 3, 1860 |
| The Dalles | Jan. 11, 1875 | June 1, 1875 |
| Vale | Mar. 15, 1910 | July 1, 1910 |
| South Dakota: | | |
| Timber Lake | Feb. 12, 1911 | May 1, 1911 |
| Bellefourche | Feb. 6, 1909 | July 1, 1909 |
| Chamberlain | Feb. 10, 1890 | Apr. 3, 1890 |
| Gregory | July 14, 1880 | Jan. 3, 1882 |
| Lemmon | May 29, 1908 | Aug. 1, 1908 |
| Pierre | Feb. 10, 1890 | May 12, 1890 |
| Rapid City | Dec. 13, 1888 | Jan. 15, 1889 |
| Utah: | | |
| Salt Lake City | July 16, 1868 | Nov. 1, 1868 |
| Vernal | May 9, 1905 | July 1, 1905 |
| Washington: | | |
| North Yakima | Apr. 11, 1885 | Apr. 24, 1885 |
| Olympia | May 16, 1890 | Oct. 1, 1890 |
| Seattle | June 27, 1887 | Dec. 3, 1887 |
| Spokane | June 23, 1883 | Oct. 1, 1883 |
| Vancouver | May 16, 1860 | July 3, 1861 |
| Walla Walla | Mar. 3, 1871 | July 17, 1871 |
| Waterville | May 16, 1890 | Nov. 6, 1890 |
| Wisconsin: | | |
| Wausau | June 19, 1872 | Aug. 19, 1872 |
| Wyoming: | | |
| Buffalo | Mar. 3, 1887 | May 1, 1888 |
| Cheyenne | Feb. 5, 1870 | Aug. 10, 1870 |
| Douglas | Apr. 23, 1890 | Nov. 1, 1890 |
| Evanston | Aug. 9, 1876 | Aug. 13, 1877 |
| Lander | Apr. 23, 1890 | Nov. 8, 1890 |
| Sundance | Apr. 3, 1890 | Oct. 27, 1890 |

NOTE.—The land offices in Ohio, Indiana, Illinois, and Iowa are abolished, and the vacant tracts of public lands in those States are subject to entry and location at the General Land Office, Washington, D. C.

### *List of offices of United States surveyors-general.*

| Locations. | Established. | Locations. | Established. |
|---|---|---|---|
| Alaska: Juneau | May 17, 1884 | New Mexico: Santa Fe | Mar. 2, 1867 |
| Arizona: Phoenix | Feb. 24, 1863 | Oregon: Portland | July 17, 1854 |
| California: San Francisco | Mar. 3, 1851 | South Dakota: Huron | Apr. 10, 1890 |
| Colorado: Denver | Feb. 28, 1861 | Utah: Salt Lake City | July 16, 1868 |
| Idaho: Boise | June 29, 1866 | Washington: Olympia | July 17, 1854 |
| Montana: Helena | July 2, 1864 | Wyoming: Cheyenne | Feb. 5, 1870 |
| Nevada: Reno | July 4, 1866 | | |

### *Field division headquarters of special agents of General Land Office.*

| Field division: | | Field division—Continued. | |
|---|---|---|---|
| 1 | Portland, Oreg. | 7 | Cheyenne, Wyo. |
| 2 | San Francisco, Cal. | 8 | Duluth, Minn. |
| 3 | Seattle, Wash. | 9 | Little Rock, Ark. |
| 4 | Helena, Mont. | 10 | Salt Lake City, Utah. |
| 5 | Denver, Colo. | 11 | Gainesville, Fla. |
| 6 | Los Angeles, Cal. | 12 | Santa Fe, N. Mex. |

### *Average number of employees of the General Land Office.*

| | |
|---|---|
| In General Land Office, Washington, D. C. | 526 |
| In 13 offices of surveyors-general | 185 |
| In 103 district land offices | 416 |
| In the field service | 185 |
| In the surveying service | 142 |
| Total | 1,454 |

### *Final homestead entries from the passage of the homestead act to June 30, 1911.*

| Fiscal year ended June 30— | Number. | Acres. | Fiscal year ended June 30— | Number. | Acres. |
|---|---|---|---|---|---|
| 1868 | 2,772 | 355,086.04 | 1891 | 27,686 | 3,954,587.77 |
| 1869 | 3,965 | 504,301.97 | 1892 | 22,822 | 3,259,897.07 |
| 1870 | 4,041 | 519,727.84 | 1893 | 24,204 | 3,477,231.63 |
| 1871 | 5,087 | 629,162.25 | 1894 | 20,544 | 2,929,947.41 |
| 1872 | 5,917 | 707,409.83 | 1895 | 20,922 | 2,980,809.30 |
| 1873 | 10,311 | 1,224,890.93 | 1896 | 20,099 | 2,790,242.55 |
| 1874 | 14,129 | 1,585,781.56 | 1897 | 20,115 | 2,778,404.20 |
| 1875 | 18,293 | 2,068,537.74 | 1898 | 22,281 | 3,095,017.75 |
| 1876 | 22,530 | 2,590,552.81 | 1899 | 22,812 | 3,134,149.44 |
| 1877 | 19,900 | 2,407,828.19 | 1900 | 25,286 | 3,477,842.71 |
| 1878 | 22,460 | 2,662,980.82 | 1901 | 37,568 | 5,241,120.76 |
| 1879 | 17,391 | 2,070,842.39 | 1902 | 31,627 | 4,342,747.70 |
| 1880 | 15,441 | 1,938,234.89 | 1903 | 26,373 | 3,576,964.14 |
| 1881 | 15,077 | 1,928,204.76 | 1904 | 23,932 | 3,232,716.75 |
| 1882 | 17,174 | 2,219,453.80 | 1905 | 24,621 | 3,419,387.15 |
| 1883 | 18,998 | 2,504,414.51 | 1906 | 25,546 | 3,526,748.58 |
| 1884 | 21,843 | 2,945,574.72 | 1907 | 26,485 | 3,740,567.71 |
| 1885 | 22,066 | 3,032,679.11 | 1908 | 29,636 | 4,242,710.59 |
| 1886 | 19,356 | 2,663,531.83 | 1909 | 25,510 | 3,699,466.79 |
| 1887 | 19,866 | 2,749,037.48 | 1910 | 23,253 | 3,795,862.89 |
| 1888 | 22,413 | 3,175,400.64 | 1911 | 25,908 | 4,620,197.12 |
| 1889 | 25,549 | 3,681,708.80 | | | |
| 1890 | 28,080 | 4,060,592.77 | Total | 899,889 | 123,540,355.69 |

*Timber and stone entries from the passage of the act of June 3, 1878, to June 30, 1911.*

| States or Territories. | Number of entries. | Acres. | Amount received. | States or Territories. | Number of entries. | Acres. | Amount received. |
|---|---|---|---|---|---|---|---|
| Alabama | 228 | 18,978.77 | $50,144.71 | Nebraska | 1 | 97.20 | $243.00 |
| Arizona | 3 | 200.00 | 500.00 | Nevada | 49 | 6,222.32 | 15,558.19 |
| Arkansas | 2,090 | 228,865.49 | 577,419.03 | North Dakota | 81 | 8,566.90 | 21,807.25 |
| California | 19,514 | 2,755,791.76 | 6,913,965.66 | Oklahoma | 1 | 40.00 | 100.00 |
| Colorado | 2,707 | 335,557.76 | 845,810.47 | Oregon | 25,439 | 3,638,179.54 | 9,152,394.15 |
| Florida | 765 | 88,242.68 | 230,926.33 | South Dakota | 506 | 56,655.84 | 143,569.92 |
| Idaho | 7,148 | 963,668.95 | 2,472,484.01 | Utah | 18 | 1,761.21 | 4,093.09 |
| Iowa | 3 | 119.36 | 298.40 | Washington | 15,754 | 2,099,357.30 | 5,285,094.79 |
| Louisiana | 1,531 | 135,905.17 | 335,369.97 | Wisconsin | 1,057 | 77,734.67 | 194,811.45 |
| Michigan | 1,566 | 131,299.84 | 331,016.17 | Wyoming | 3,176 | 360,085.22 | 882,115.35 |
| Minnesota | 11,941 | 1,348,559.67 | 3,389,418.32 | | | | |
| Mississippi | 80 | 5,795.82 | 14,512.19 | Total | 97,348 | 12,870,460.97 | 32,438,749.54 |
| Montana | 4,684 | 608,675.50 | 1,542,094.07 | | | | |

*Desert-land entries from the passage of the act of Mar. 3, 1877, to June 30, 1911.*

| States or Territories. | Entries. | | Area. | | Amount. | | |
|---|---|---|---|---|---|---|---|
| | Original. | Final. | Original. | Final. | Original. | Final. | Total. |
| | | | *Acres.* | *Acres.* | | | |
| Arizona | 5,851 | 873 | 1,780,451.20 | 241,802.31 | $447,835.41 | $243,284.87 | $691,120.28 |
| California | 14,256 | 2,474 | 3,333,751.60 | 507,816.65 | 848,457.11 | 530,858.59 | 1,379,315.70 |
| Colorado | 14,081 | 2,002 | 2,669,210.61 | 348,964.41 | 667,817.11 | 348,808.09 | 1,016,625.20 |
| Dakota Territory | 35 | 1 | 20,021.00 | 300.00 | 5,005.25 | 300.00 | 5,305.25 |
| Idaho | 14,082 | 2,839 | 2,501,036.49 | 673,879.20 | 625,008.27 | 672,627.58 | 1,297,635.85 |
| Montana | 26,729 | 10,313 | 5,170,744.50 | 1,983,774.61 | 1,298,550.06 | 1,994,624.41 | 3,293,174.47 |
| Nevada | 1,432 | 189 | 343,984.72 | 44,870.60 | 86,236.07 | 44,803.12 | 131,039.19 |
| New Mexico | 9,178 | 1,089 | 1,797,764.44 | 152,749.42 | 451,282.19 | 252,362.32 | 703,644.51 |
| North Dakota | 512 | 99 | 84,495.13 | 16,457.15 | 21,123.99 | 16,521.89 | 37,645.88 |
| Oregon | 5,136 | 1,111 | 891,618.10 | 191,812.24 | 222,670.02 | 190,769.12 | 413,439.14 |
| South Dakota | 3,513 | 301 | 544,908.01 | 53,785.02 | 135,546.36 | 53,944.96 | 189,491.32 |
| Utah | 6,703 | 1,704 | 1,203,718.45 | 281,514.90 | 307,714.97 | 287,298.18 | 595,013.15 |
| Washington | 4,766 | 391 | 816,580.74 | 42,713.83 | 215,193.63 | 56,463.31 | 271,656.94 |
| Wyoming | 14,953 | 5,107 | 3,383,924.26 | 1,163,196.13 | 852,766.67 | 1,171,867.62 | 2,024,634.29 |
| Total | 121,126 | 29,493 | 24,362,209.25 | 5,823,639.47 | 6,185,207.91 | 5,864,534.06 | 12,049,741.97 |

*Timber-culture entries from the passage of the act of Mar. 3, 1873, to June 30, 1911.*

| States or Territories. | Entries. | | | Area. | | | Amount. | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Original. | Final. | Commuted. | Original. | Final. | Commuted. | Fees (original). | Fees (final). | Purchase money. | Total. |
| | | | | *Acres.* | *Acres.* | *Acres.* | | | | |
| Arizona | 1,152 | 52 | 74 | 164,806.63 | 7,149.14 | 10,223.42 | $15,224.00 | $208.00 | $12,779.26 | $28,211.26 |
| Arkansas | 41 | 4 | 1 | 4,817.14 | 480.00 | 40.00 | 489.00 | 16.00 | 44.00 | 549.00 |
| California | 8,264 | 480 | 567 | 1,163,922.03 | 63,411.58 | 78,728.76 | 110,014.00 | 1,904.00 | 98,499.13 | 210,417.13 |
| Colorado | 27,864 | 3,789 | 660 | 4,332,922.19 | 585,243.30 | 98,179.52 | 384,938.00 | 15,154.00 | 122,722.86 | 522,814.86 |
| Dakota Territory | 77,446 | 1,309 | ........... | 12,055,642.98 | 185,467.24 | ........... | 1,074,862.44 | 4,984.79 | ........... | 1,079,847.23 |
| Florida | 3 | ........... | ........... | 480.00 | ........... | ........... | 42.00 | ........... | ........... | 42.00 |
| Idaho | 4,054 | 341 | 236 | 533,957.49 | 40,436.03 | 28,244.51 | 51,447.38 | 1,369.50 | 35,305.98 | 88,122.86 |
| Iowa | 1,044 | 390 | 39 | 81,378.95 | 31,987.87 | 2,292.17 | 11,838.83 | 1,560.00 | 2,965.22 | 16,364.05 |
| Kansas | 64,345 | 12,886 | 961 | 9,702,653.36 | 2,005,831.35 | 142,931.88 | 883,275.56 | 51,529.03 | 178,650.55 | 1,113,455.14 |
| Louisiana | 713 | 87 | 42 | 101,695.31 | 11,937.97 | 5,856.85 | 9,651.55 | 348.00 | 7,299.54 | 17,299.09 |
| Minnesota | 15,268 | 2,924 | 389 | 2,099,046.55 | 373,580.90 | 40,261.29 | 207,154.98 | 11,712.00 | 61,543.77 | 280,410.75 |
| Montana | 3,595 | 407 | 226 | 486,638.66 | 56,019.78 | 29,044.43 | 46,162.00 | 1,632.00 | 36,506.32 | 84,300.32 |
| Nebraska | 59,127 | 16,870 | 1,250 | 8,876,351.20 | 2,546,696.04 | 187,371.35 | 813,382.33 | 67,776.73 | 234,332.61 | 1,115,491.67 |
| Nevada | 46 | 1 | ........... | 6,292.50 | 160.00 | ........... | 614.00 | 4.00 | ........... | 618.00 |
| New Mexico | 1,612 | 91 | 55 | 230,316.54 | 12,931.60 | 7,837.25 | 21,294.00 | 363.00 | 9,796.56 | 31,453.56 |
| North Dakota | 1,699 | 7,897 | 781 | 263,123.95 | 1,226,605.66 | 120,524.80 | 23,446.00 | 31,576.83 | 150,661.75 | 205,684.58 |
| Oregon | 7,126 | 1,501 | 252 | 1,051,235.21 | 224,385.60 | 35,902.61 | 95,821.00 | 6,024.00 | 44,878.37 | 146,717.37 |
| South Dakota | 2,925 | 13,764 | 821 | 449,583.61 | 2,124,753.58 | 121,730.98 | 40,151.00 | 55,036.00 | 152,082.89 | 247,269.89 |
| Utah | 1,476 | 138 | 89 | 179,690.74 | 15,556.26 | 10,157.44 | 17,925.00 | 552.00 | 12,696.85 | 31,173.85 |
| Washington | 9,354 | 2,004 | 538 | 1,362,193.51 | 292,447.52 | 75,689.54 | 125,615.00 | 8,012.00 | 94,770.83 | 228,397.83 |
| Wisconsin | 1 | 1 | ........... | 40.00 | 40.00 | ........... | 9.00 | 4.00 | ........... | 13.00 |
| Wyoming | 3,123 | 332 | 125 | 459,556.42 | 50,383.08 | 15,288.29 | 41,904.00 | 1,328.00 | 19,135.91 | 62,367.91 |
| Total | 290,278 | 65,268 | 7,105 | 43,606,344.97 | 9,855,504.45 | 1,010,305.09 | 3,975,261.07 | 261,093.88 | 1,274,671.85 | 5,511,020.80 |

## *Coal-land entries from the passage of the act of Mar. 3, 1873, to June 30, 1911.*

| States or Territories. | Entries. | Acres. | Amount. |
|---|---|---|---|
| Alabama | 2 | 239.40 | $2,394.00 |
| Alaska [1] | 159 | 37,011.81 | 370,118.58 |
| Arizona | 24 | 3,828.39 | 46,283.90 |
| California | 38 | 5,535.06 | 81,531.30 |
| Colorado | 1,023 | 154,277.55 | 2,160,379.30 |
| Colorado [2] | 433 | 56,786.77 | 840,838.90 |
| Dakota [3] | 8 | 583.57 | 5,835.70 |
| Idaho | 7 | 843.18 | 8,431.80 |
| Montana | 364 | 53,300.00 | 938,537.50 |
| Nevada | 5 | 640.11 | 8,002.20 |
| New Mexico | 191 | 22,429.22 | 348,697.40 |
| North Dakota | 131 | 7,891.71 | 119,442.40 |
| Oregon | 51 | 8,203.33 | 87,740.30 |
| South Dakota | 37 | 2,553.74 | 28,337.40 |
| Utah | 391 | 55,748.73 | 1,193,269.75 |
| Washington | 361 | 56,585.52 | 885,965.40 |
| Wyoming | 689 | 100,788.83 | 1,706,536.38 |
| Total | 3,914 | 567,246.87 | 8,832,343.01 |

[1] The showing of 159 "entries" in this table includes locations on which final certificates have issued and those on which payment has been made but for which receiver's receipt only has issued. There are only 35 coal claims in Alaska on which final certificates have issued to date, which carry an area of 5,446.848 acres, for which there has been paid $54,468.48. No coal claims have been patented. This explanation is made in view of the fact that in prior reports all proofs upon which payments were made were given as entries.

[2] Within the Ute Indian Reservation.

[3] Territory.

## *Land concessions by acts of Congress to States and corporations for railroad and military wagon-road purposes from the year 1850 to June 30, 1911.*

### STATE GRANTS.

| | Acres. |
|---|---|
| **Illinois:** | |
| Illinois Central | 2,595,133.00 |
| **Mississippi:** | |
| Mobile & Ohio River | [1] 737,130.29 |
| Vicksburg & Meridian | 199,101.51 |
| Gulf & Ship Island | 139,113.22 |
| | 1,075,345.02 |
| **Alabama:** | |
| Mobile & Ohio River | [1] 419,528.44 |
| Alabama & Florida | 399,022.84 |
| Selma, Rome & Dalton | 458,555.82 |
| Coosa & Tennessee | 67,784.96 |
| Mobile & Girard | [2] 302,181.16 |
| Alabama & Chattanooga | 653,888.76 |
| South & North Alabama | 445,438.43 |
| | 2,746,400.41 |
| **Florida:** | |
| Florida Central & Peninsular | 729,834.70 |
| Florida & Alabama | 166,691.08 |
| Pensacola & Georgia | 1,279,236.70 |
| Florida, Atlantic & Gulf Central | 29,384.18 |
| | 2,205,146.66 |

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[1] In the adjustment of this grant the road was treated as an entirety and without reference to the State line; hence Alabama has had approved to her more and Mississippi less than they would appear to be entitled to in proportion to the length of the road in the respective States.

[2] This grant was adjusted Apr. 24, 1893, and 302,181.16 acres were allotted to the company. The balance of the previously certified lands were ordered restored to entry under the forfeiture act of Sept. 29, 1890.

| | Acres. |
|---|---|
| **Louisiana:** | |
| Vicksburg, Shreveport & Pacific | 463, 746. 78 |
| New Orleans, Opelousas & Great Western | (1) |
| **Arkansas:** | |
| St. Louis, Iron Mountain & Southern | 1, 325, 355. 46 |
| Little Rock & Fort Smith | 1, 052, 082. 51 |
| Memphis & Little Rock | 184, 657. 33 |
| | 2, 562, 095. 30 |
| **Missouri:** | |
| Southwest branch of the Pacific Road | 1, 161, 284. 51 |
| Hannibal & St. Joseph | 611, 323. 35 |
| St. Louis, Iron Mountain & Southern | 65, 120. 31 |
| | 1, 837, 728. 17 |
| **Iowa:** | |
| Burlington & Missouri River | 389, 990. 11 |
| Chicago, Rock Island & Pacific | [2] 483, 214. 36 |
| Cedar Rapids & Missouri River | 161, 532. 81<br>[2] 922, 813. 67<br>244, 022. 96 |
| Dubuque & Sioux City | [2] 556, 406. 74 |
| Iowa Falls & Sioux City | 683, 057. 34 |
| Des Moines Valley | 840, 091. 36 |
| Chicago, Milwaukee & St. Paul | 326, 216. 10 |
| McGregor & Missouri River | 322, 412. 81 |
| Sioux City & St. Paul | |
| | 4, 929, 758. 26 |
| **Michigan:** | |
| Port Huron & Lake Michigan | 37, 467. 44 |
| Jackson, Lansing & Saginaw | 743, 787. 58 |
| Grand Rapids & Indiana | 852, 521. 10 |
| Flint & Pere Marquette | 512, 877. 03 |
| Marquette, Houghton & Ontonagon | [3] 305, 929. 59 |
| Ontonagon & Brule River | 34, 227. 08 |
| Bay de Noquet & Marquette | 128, 301. 05 |
| Chicago & North Western | 518, 065. 36 |
| | 3, 133, 176. 23 |
| **Wisconsin:** | |
| Chicago, St. Paul, Minneapolis & Omaha (formerly West Wisconsin) | 813, 706. 71 |
| Wisconsin Railroad Farm Mortgage Land Co | 163, 159. 65 |
| Chicago, St. Paul, Minneapolis & Omaha (formerly St. Croix & Lake Superior) | 816, 487. 76 |
| Branch to Bayfield | 471, 721. 14 |
| Chicago & North Western | 546, 446. 20 |
| Wisconsin Central | 838, 227. 69 |
| | 3, 649, 749. 15 |

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[1] Certified lands, footing 719,189.79 acres, were reconveyed to the United States by the governor of Louisiana Feb. 24, 1888, the grant having been forfeited by the act of July 14, 1870 (16 Stat., 277).

[2] Includes 35,685.49 acres of the Chicago, Rock Island & Pacific R. R., 109,756.85 acres of the Cedar Rapids & Missouri River R. R., and 77,535.22 acres of the Dubuque & Sioux City R. R., situated in the old Des Moines River grant of Aug. 8, 1846, which should be deducted from the foregoing amount. (Wolcott *v.* Des Moines Co., 5 Wall., 681.)

[3] Excess of 131,481.71 acres originally certified under this grant reconveyed by State or entered under act Mar. 3, 1887, by Michigan Land & Iron Co. (Ltd.), grant having been forfeited in part by act Mar. 2, 1889 (25 Stat., 1008).

| | Acres. |
|---|---|
| **Minnesota:** | |
| St. Paul, Minneapolis & Manitoba (formerly first division, St. Paul & Pacific) | [1] 3,256,477.73 |
| Western Railroad (succeeded by St. Paul & Northern Pacific Railroad Co.) | |
| St. Paul, Minneapolis & Manitoba (formerly St. Vincent extension of the St. Paul & Pacific) | |
| Minnesota Central | 179,734.29 |
| Winona & St. Peter | 1,680,974.92 |
| St. Paul & Sioux City | 1,126,578.55 |
| St. Paul & Duluth | 860,973.62 |
| Southern Minnesota, from a point on the Mississippi River to Houston | 546,745.44 |
| Southern Minnesota, extension (now Chicago, Milwaukee & St. Paul) | |
| Hastings & Dakota | 377,776.15 |
| | 8,028,999.95 |
| **Minnesota, North Dakota, Montana, Washington:** | |
| St. Paul, Minneapolis & Manitoba, now Great Northern (main and branch), a special act (Aug. 5, 1892, 27 Stat. L., 390) to provide for indemnity for lands relinquished by the company | (2) |
| **Kansas:** | |
| Leavenworth, Lawrence & Galveston | [3] 249,446.13 |
| Missouri, Kansas & Texas | [4] 976,593.22 |
| Atchison, Topeka & Santa Fe | 2,944,788.14 |
| St. Joseph & Denver City | 462,933.24 |
| | 4,633,760.73 |
| Grand total of State grants | 37,860,300.39 |

CORPORATION GRANTS.

| | |
|---|---|
| Union Pacific | 11,930,685.95 |
| Central Pacific | 5,842,717.72 |
| Central Pacific (successor by consolidation with Western Pacific) | 458,147.97 |
| Central Branch Union Pacific | 223,080.50 |
| Union Pacific (Kansas Division) | 6,175,660.63 |
| Union Pacific (successor to Denver Pacific Ry. Co.) | 807,564.76 |
| Burlington & Missouri River in Nebraska | 2,374,090.77 |
| Sioux City & Pacific (now Missouri Valley Land Co.) | 42,610.95 |
| Northern Pacific | 33,279,866.99 |
| Oregon Branch of the Central Pacific (California & Oregon) | 3,154,994.16 |
| Oregon & California | 2,765,677.10 |
| Atlantic & Pacific (now Santa Fe Pacific) | 4,280,502.45 |
| Southern Pacific (main line) | 3,677,509.83 |
| Southern Pacific (branch line) | 1,451,281.08 |
| Oregon Central | 128,618.13 |
| New Orleans Pacific | 1,001,783.27 |
| Grand total to corporations | 77,594,792.26 |

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[1] Declared to be one grant. (See 32 L. D., 21.)

[2] See Minnesota for original grants.

[3] Includes 186,936.72 acres of the "Osage ceded reservation," which are to be deducted from the above amount under the decision of the Supreme Court in the case of the Leavenworth, Lawrence & Galveston Railroad *v.* The United States (92 U. S., 733).

[4] Includes 270,970.78 acres in the "Osage ceded reservation," which are to be deducted under the decision cited in note (3).

| WAGON ROADS. | Acres. |
|---|---|
| From Lake Erie to Connecticut Western Reserve | 80,773.54 |
| From Lake Michigan to Ohio River | 170,580.24 |
| From Fort Wilkins, Copper Harbor, Mich., to Green Bay, Wis | 302,930.96 |
| From Fort Wilkins, Copper Harbor, to Wisconsin State line | 221,013.35 |
| Oregon Central Military Co. (now California & Oregon Land Co.) | 666,655.78 |
| Corvallis and Yaquina Bay | 81,895.25 |
| Willamette Valley and Cascade Mountain | 861,511.86 |
| Dalles Military Road | 556,827.04 |
| Coos Bay Military Road | 105,240.11 |
| Grand total | 3,047,428.13 |

*Withdrawals under the act of Mar. 15, 1910 (36 Stat., 237), during the fiscal year ended June 30, 1911.*

| States. | Applied for. | Rejected or relinquished before withdrawal. | Withdrawn. | Restored. |
|---|---|---|---|---|
| | *Acres.* | *Acres.* | *Acres.* | *Acres.* |
| Colorado | 443,447.57 | 68.83 | 272,577.73 | 160.00 |
| Idaho | 193,456.57 | 5,519.45 | 162,846.72 | 18,196.33 |
| Montana | 110,027.61 | 37,063.83 | 32,976.29 | |
| Nevada | 768,875.70 | | 266,031.22 | 10,044.07 |
| Oregon | 165,461.44 | 160.00 | 156,373.72 | |
| Utah | 236,106.91 | 36.88 | 167,611.03 | |
| Wyoming | 221,097.67 | 3.47 | 18,591.17 | |
| Total | 2,137,975.47 | 42,852.46 | 1,077,085.88 | 28,400.40 |

RECAPITULATION.

| | Acres. | | Acres. |
|---|---|---|---|
| Applied for | 2,137,975.47 | Withdrawn | 1,077,085.88 |
| | | Rejected or relinquished | 42,852.46 |
| | | Acted on | 1,018,037.13 |
| | 2,137,975.47 | | 2,137,975.47 |

*Withdrawals under the act of Mar. 15, 1910, from the passage of the act to June 30, 1911.*

| States. | Amount applied for. | Rejected or eliminated before withdrawal. | Withdrawn. | Restored. |
|---|---|---|---|---|
| | *Acres.* | *Acres.* | *Acres.* | *Acres.* |
| Colorado | 605,323.79 | 68.83 | 272,577.73 | 160.00 |
| Idaho | 294,927.99 | 12,524.73 | 257,312.86 | 18,196.33 |
| Montana | 110,027.61 | 37,063.83 | 32,976.29 | |
| Nevada | 768,375.70 | | 266,031.22 | 10,044.07 |
| New Mexico | 10,000.00 | | | |
| Oregon | 165,461.44 | 160.00 | 156,373.72 | |
| Utah | 242,653.23 | 36.88 | 167,611.03 | |
| Wyoming | 224,151.56 | 3.47 | 18,591.17 | |
| Total | 2,420,926.32 | 49,857.74 | 1,171,474.02 | 28,400.40 |

NOTE.—Two informal applications of the State of Wyoming, which have not been perfected, are omitted from this report; estimated areas were included in the report for the year ended June 30, 1910.

RECAPITULATION.

| | Acres. | | Acres. |
|---|---|---|---|
| Applied for | 2,420,926.32 | Withdrawn | 1,171,474.02 |
| | | Rejected or relinquished | 49,857.74 |
| | | Acted on | 1,199,594.56 |
| | 2,420,926.32 | | 2,420,926.32 |

*State desert-land segregation under section 4 of the act of Aug. 18, 1894 (28 Stat., 372–422), and the acts amendatory thereof, commonly known as the Carey Act, with the action taken thereon, from the passage of the act to June 30, 1911.*

| States. | Applied for. | Segregated. | Rejected or relinquished. | Patented. | Reconveyed. | Time to reclaim extended. |
|---|---|---|---|---|---|---|
| | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* |
| Colorado | 373,593.56 | 272,197.98 | 46,213.25 | | | |
| Idaho | 3,091,645.59 | 1,284,304.92 | 521,249.98 | 221,084.00 | | 51,178.46 |
| Montana | 533,588.92 | 172,409.01 | 143,081.96 | 18,296.91 | [1] 10,104.03 | 62,604.96 |
| Nevada | 107,643.88 | 36,808.59 | 46,749.85 | | | |
| New Mexico | 10,164.68 | 7,564.68 | 2,600.00 | | | |
| Oregon | 655,706.19 | 295,588.55 | 227,657.12 | 51,583.13 | 6,014.49 | |
| Utah | 427,669.74 | 136,820.63 | 267,980.83 | | | |
| Washington | 155,649.39 | | 155,649.39 | | | |
| Wyoming | 1,760,677.24 | 987,625.00 | 234,520.86 | 97,439.15 | 1,192.80 | 17,397.53 |
| Total | 7,116,339.19 | 3,193,314.36 | 1,404,502.74 | 388,403.79 | 17,311.32 | 131,180.94 |

[1] Remains segregated.

## RECAPITULATION.

| | Acres. | | Acres. |
|---|---|---|---|
| Applied for | 7,116,339.19 | Segregated | 3,193,314.36 |
| | | Relinquished or rejected | 1,404,502.74 |
| | | Acted on | 2,518,522.09 |
| | 7,116,339.19 | | 7,116,339.19 |

*Public and Indian lands entered each year ended June 30, from 1905 to 1911, inclusive.*

| States or Territories. | 1905 | 1906 | 1907 | 1908 | 1909 | 1910 | 1911 |
|---|---|---|---|---|---|---|---|
| | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* |
| Alabama | 97,561.08 | 102,621.51 | 92,530.30 | 81,228.56 | 50,930.86 | 47,353.42 | 49,518.88 |
| Alaska | 2,973.11 | 4,925.86 | 7,132.16 | 3,834.80 | 10,772.33 | 17,508.03 | 15,477.69 |
| Arizona | 151,340.84 | 107,054.87 | 86,121.64 | 198,509.64 | 468,160.64 | 541,793.23 | 486,066.86 |
| Arkansas | 416,583.11 | 441,530.07 | 496,015.40 | 333,676.41 | 171,316.50 | 137,637.76 | 201,006.00 |
| California | 1,032,758.32 | 809,811.28 | 579,294.93 | 766,932.98 | 1,290,579.46 | 1,214,348.36 | 1,064,644.89 |
| Colorado | 621,100.25 | 1,597,010.38 | 2,483,666.69 | 2,127,661.99 | 1,983,078.58 | 3,994,757.50 | 2,272,068.99 |
| Florida | 326,579.30 | 166,053.73 | 109,663.03 | 83,072.78 | 125,744.65 | 121,837.68 | 144,809.48 |
| Idaho | 609,568.10 | 734,763.70 | 1,162,745.25 | 1,087,402.94 | 1,383,443.88 | 1,768,010.34 | 1,191,012.91 |
| Illinois | 40.00 | 40.00 | 296.30 | 40.00 | | | |
| Indiana | 9.30 | | 129.70 | 10.08 | 40.00 | | |
| Iowa | 1,010.84 | 957.93 | 195.65 | 1,433.69 | 564.04 | 160.02 | |
| Kansas | 273,100.34 | 669,438.67 | 611,726.97 | 332,931.81 | 166,375.14 | 157,311.36 | 122,810.19 |
| Louisiana | 269,200.68 | 80,086.61 | 89,608.79 | 59,450.26 | 39,428.40 | 22,344.86 | 24,432.63 |
| Michigan | 41,519.50 | 38,669.10 | 42,828.40 | 46,147.59 | 33,813.58 | 19,612.94 | 17,189.17 |
| Minnesota | 835,314.29 | 397,567.07 | 324,418.22 | 429,351.12 | 385,816.56 | 296,177.03 | 239,830.59 |
| Mississippi | 77,034.04 | 75,856.78 | 55,645.26 | 35,545.37 | 35,908.88 | 29,339.15 | 34,440.75 |
| Missouri | 104,096.72 | 101,426.89 | 154,871.72 | 129,157.20 | 53,560.91 | 52,509.66 | 19,292.74 |
| Montana | 1,086,290.05 | 1,782,279.90 | 1,218,780.97 | 1,494,052.02 | 2,460,905.55 | 6,616,734.69 | 4,659,292.48 |
| Nebraska | 4,792,351.65 | 1,736,964.79 | 1,785,762.47 | 1,781,823.80 | 1,979,872.10 | 1,638,485.72 | 1,505,584.66 |
| Nevada | 88,563.48 | 278,904.38 | 47,254.63 | 60,131.50 | 78,190.07 | 261,125.24 | 312,510.88 |
| New Jersey | | 90.03 | | | | | |
| New Mexico | 603,264.07 | 1,235,059.38 | 2,758,006.91 | 2,850,337.11 | 2,542,799.18 | 1,924,145.46 | 1,377,563.07 |
| North Dakota | 1,679,722.76 | 3,325,828.23 | 2,256,423.56 | 1,383,957.19 | 877,649.71 | 807,512.18 | 513,357.48 |
| Oklahoma | 770.225.35 | 1,426,306.46 | 2,007,753.84 | 514,159.58 | 297,572.30 | 193,692.95 | 146,600.50 |
| Oregon | 769,480.58 | 617,293.21 | 951,481.34 | 1,021,001.29 | 1,091,580.56 | 1,050,723.53 | 742,049.87 |
| South Dakota | 1,028,149.12 | 1,707,684.39 | 1,502,411.24 | 2,086,171.82 | 2,219,560.32 | 2,946,827.85 | 1,711,629.43 |
| Utah | 185,517.13 | 413,030.21 | 334,827.36 | 469,311.88 | 619,802.07 | 577,459.86 | 693,770.08 |
| Washington | 773,541.23 | 989,907.66 | 911,327.34 | 825,813.57 | 608,546.35 | 560,789.20 | 481,459.19 |
| Wisconsin | 72,012.71 | 55,592.44 | 28,966.92 | 57,595.61 | 19,061.18 | 17,007.38 | 17,970.36 |
| Wyoming | 347,714.32 | 534,431.94 | 897,679.59 | 829,614.19 | 897,479.96 | 1,377,063.74 | 1,167,042.50 |
| Total | 17,066,622.27 | 19,431,187.47 | 20,997,566.58 | 19,090,356.78 | 19,892,503.76 | 26,391,269.09 | 19,211,372.27 |

## *Unappropriated lands on June 30, 1911.*

[A circular showing area unappropriated, by counties, is distributed on request.]

| States or Territories. | Area unappropriated and unreserved. | | |
|---|---|---|---|
| | Surveyed. | Unsurveyed. | Total. |
| | *Acres.* | *Acres.* | *Acres.* |
| Alabama | 100,200 | ........ | 100,200 |
| Alaska | ........ | [1] 368,011,291 | 368,011,291 |
| Arizona | 12,040,428 | 28,982,455 | 41,022,883 |
| Arkansas | 515,455 | ........ | 515,455 |
| California | 18,012,903 | 5,350,061 | 23,362,964 |
| Colorado | 19,069,624 | 1,529,476 | 20,599,100 |
| Florida | 321,638 | 155,531 | 477,169 |
| Idaho | 6,180,332 | 17,942,705 | 24,123,037 |
| Kansas | 108,402 | ........ | 108,402 |
| Louisiana | 70,313 | ........ | 70,313 |
| Michigan | 105,130 | ........ | 105,130 |
| Minnesota | 1,759,027 | 45,965 | 1,804,992 |
| Mississippi | 51,960 | ........ | 51,960 |
| Missouri | 1,483 | ........ | 1,483 |
| Montana | 15,283,718 | 16,746,928 | 32,030,646 |
| Nebraska | 1,336,499 | ........ | 1,336,499 |
| Nevada | 28,924,771 | 26,058,377 | 54,983,148 |
| New Mexico | 23,093,519 | 10,677,848 | 33,771,367 |
| North Dakota | 1,300,333 | ........ | 1,300,333 |
| Oklahoma | 42,919 | ........ | 42,919 |
| Oregon | 13,257,246 | 3,995,929 | 17,253,175 |
| South Dakota | 3,550,573 | 122,720 | 3,673,293 |
| Utah | 11,587,569 | 23,447,035 | 35,034,604 |
| Washington | 1,196,231 | 781,560 | 1,977,791 |
| Wisconsin | 13,500 | ........ | 13,500 |
| Wyoming | 30,965,363 | 2,664,242 | 33,629,605 |
| Grand total | 188,889,136 | 506,512,123 | 695,401,259 |

[1] The unreserved lands in Alaska are mostly unsurveyed and unappropriated.

## *Public lands surveyed and remaining unsurveyed.*

| States or Territories. | Land area. | Surveyed during fiscal year ended June 30, 1911. | Surveyed to June 30, 1911. | Unsurveyed. |
|---|---|---|---|---|
| | *Acres.* | *Acres.* | *Acres.* | *Acres.* |
| Alabama | 32,818,560 | ........ | 32,818,560 | ........ |
| Alaska | 378,165,760 | 1,448 | 16,713 | 378,149,047 |
| Arizona | 72,857,600 | 146,896 | 21,278,480 | 51,579,120 |
| Arkansas | 33,616,000 | ........ | 33,616,000 | ........ |
| California | 99,898,880 | 54,935 | 78,350,268 | 21,548,612 |
| Colorado | 66,341,120 | 393,281 | 63,177,457 | 3,163,663 |
| Florida | 35,111,040 | ........ | 30,912,571 | 4,198,469 |
| Illinois | 35,841,280 | ........ | 35,841,280 | ........ |
| Indiana | 22,966,400 | ........ | 22,966,400 | ........ |
| Iowa | 35,575,040 | ........ | 35,575,040 | ........ |
| Idaho | 53,618,560 | 853,923 | 27,049,799 | 26,568,761 |
| Kansas | 52,335,360 | ........ | 52,335,360 | ........ |
| Louisiana | 29,061,760 | 484 | 27,177,480 | 1,884,280 |
| Michigan | 36,787,200 | ........ | 36,787,200 | ........ |
| Minnesota | 51,749,120 | 364,986 | 49,822,176 | 1,926,944 |
| Mississippi | 29,671,680 | ........ | 29,671,680 | ........ |
| Missouri | 43,985,280 | ........ | 43,985,280 | ........ |
| Montana | 93,296,640 | 2,702,296 | 58,300,123 | 34,996,517 |
| Nebraska | 49,157,120 | ........ | 49,157,120 | ........ |
| Nevada | 70,285,440 | 110,326 | 39,705,270 | 30,580,170 |
| New Mexico | 78,401,920 | 281,114 | 53,767,833 | 24,634,087 |
| North Dakota | 44,917,120 | 23,263 | 42,577,194 | 2,339,926 |
| Ohio | 26,073,600 | ........ | 26,073,600 | ........ |
| Oregon | 61,188,480 | 297,869 | 49,350,150 | 11,838,330 |
| Oklahoma | 44,424,960 | ........ | 44,424,960 | ........ |
| South Dakota | 49,195,520 | 4,770 | 49,114,396 | 81,124 |
| Utah | 52,597,760 | 706,133 | 26,606,763 | 25,990,997 |
| Wisconsin | 35,363,840 | ........ | 35,363,840 | ........ |
| Washington | 42,775,040 | 352,272 | 32,374,475 | 10,400,565 |
| Wyoming | 62,460,160 | 518,632 | 57,348,050 | 5,112,110 |
| Total | 1,620,538,240 | 6.812,628 | 1,185,545,518 | 634,992.722 |

## *Estimated area of existing national forests June 30, 1911.*

[Revised to conform to recent surveys and computations.]

| | Acres. | | Acres. |
|---|---|---|---|
| Alaska | 26,748,850 | Nevada | 5,650,347 |
| Arizona | 14,898,000 | New Mexico | 11,111,300 |
| Arkansas | 2,225,890 | North Dakota | 13,920 |
| California | 27,735,455 | Oklahoma | 61,640 |
| Colorado | 14,761,900 | Oregon | 16,148,900 |
| Florida | 674,970 | Porto Rico | 65,950 |
| Idaho | 19,643,355 | South Dakota | 1,287,700 |
| Kansas | 303,937 | Utah | 7,667,585 |
| Michigan | 163,771 | Washington | 11,684,680 |
| Minnesota | 1,204,750 | Wyoming | 8,693,543 |
| Montana | 19,305,100 | | |
| Nebraska | 556,700 | Total area | 190,608,243 |

| | Acres. |
|---|---|
| Area embraced in additions to national forests during year | 2,806,267 |
| Area embraced in eliminations from national forests during year | 4,598,705 |
| Area embraced in temporary forest withdrawals June 30, 1911 | 3,319,495 |
| Area embraced in existing national forests June 30, 1910 | 192,931,197 |
| Area embraced in existing national forests June 30, 1911 | 190,608,243 |
| Area decreased during the fiscal year ended June 30, 1911, of which decrease there is 530,516 acres due to revision of areas to conform to recent surveys and computations | 2,322,954 |

## *National monuments.*

| States and names. | Date created. | Area. |
|---|---|---|
| Alaska: | | *Acres.* |
| Sitka | Mar. 23, 1910 | [1] 57.00 |
| Arizona: | | |
| Grand Canyon [2] | Jan. 11, 1908 | [1] 806,400.00 |
| Montezuma Castle | Dec. 8, 1906 | 160.00 |
| Navajo | Mar. 20, 1909 | [3] 600.00 |
| Tonto [2] | Dec. 19, 1907 | [1] 640.00 |
| Tumacacori | Sept. 15, 1908 | 10.00 |
| Petrified Forest | July 31, 1911 | [4] 25,625.60 |
| California: | | |
| Cinder Cone [2] | May 6, 1907 | [1] 5,120.00 |
| Lassen Peak [2] | do | [1] 1,280.00 |
| Muir Woods | Jan. 9, 1908 | 295.00 |
| Pinnacles | Jan. 16, 1908 | [1] 2,080.00 |
| Devil Postpile [2] | July 6, 1911 | [1] 800.00 |
| Colorado: | | |
| Wheeler [2] | Dec. 17, 1908 | 300.00 |
| Colorado | May 24, 1911 | 13,883.06 |
| Montana: | | |
| Big Hole | June 23, 1910 | [1] 5.00 |
| Lewis and Clark Cavern | May 16, 1911 | [4] 160.00 |
| New Mexico: | | *Acres.* |
| Chaco Canyon | Mar. 11, 1907 | 20,629.40 |
| El Morro | Dec. 8, 1906 | 160.00 |
| Gila Cliff Dwellings [2] | Nov. 16, 1907 | 160.00 |
| Gran Quivira | Nov. 1, 1909 | [1] 160.00 |
| Oregon: | | |
| Oregon Caves [2] | July 12, 1909 | [1] 480.00 |
| South Dakota: | | |
| Jewel Cave [2] | Feb. 7, 1908 | [1] 1,280.00 |
| Utah: | | |
| Mukuntuweap | July 31, 1909 | [1] 15,840.00 |
| Natural Bridges | Sept. 25, 1909 | [4] 2,740.00 |
| Rainbow Bridge | May 30, 1910 | 160.00 |
| Washington: | | |
| Mount Olympus [2] | Mar. 2, 1909 | [1] 608,640.00 |
| Wyoming: | | |
| Devils Tower | Sept. 24, 1906 | 1,152.91 |
| Shoshone Cavern | Sept. 21, 1909 | 210.00 |
| Total | | [1] 1,509,027.97 |

[1] Estimated area.

[2] Under jurisdiction of Department of Agriculture.

[3] Based on 15 known ruins; within Indian reservation.

[4] According to second proclamation.

*Aggregate cash receipts from the disposal of public and Indian lands from May 20, 1785, to June 30, 1911.*

| Fiscal years. | Cash sales. | Amount of fees and commissions. | Total receipts from disposal of public lands. | Receipts from sales of Indian lands. | Miscellaneous receipts. | Aggregate receipts from all sources. |
|---|---|---|---|---|---|---|
| May 20, 1785, to June 30, 1880 | | | | | | $208,059,657.14 |
| 1881 | $3,534,550.98 | $860,833.65 | $4,395,384.63 | $1,006,691.63 | $6,727.90 | 5,408,804.16 |
| 1882 | 6,628,775.92 | 1,124,531.15 | 7,753,307.07 | 634,617.22 | 6,591.75 | 8,394,516.04 |
| 1883 | 9,657,032.28 | 1,423,329.10 | 11,080,361.38 | 625,404.27 | 8,118.05 | 11,713,883.70 |
| 1884 | 10,304,582.49 | 1,536,410.58 | 11,840,993.07 | 938,137.26 | 10,274.76 | 12,789,405.09 |
| 1885 | 6,223,926.74 | 1,462,188.06 | 7,686,114.80 | 933,483.52 | 8,821.86 | 8,628,420.18 |
| 1886 | 5,757,891.06 | 1,654,876.25 | 7,412,767.31 | 1,607,729.63 | 10,587.40 | 9,031,084.34 |
| 1887 | 9,246,321.83 | 1,537,600.39 | 10,783,921.72 | 1,484,302.30 | 20,784.85 | 12,289,008.87 |
| 1888 | 11,203,071.95 | 1,498,000.05 | 12,701,072.00 | 821,113.77 | 24,951.65 | 13,547,137.42 |
| 1889 | 8,018,254.50 | 1,251,971.23 | 9,270,225.73 | 389,524.72 | 26,150.89 | 9,685,901.34 |
| 1890 | 6,349,174.24 | 1,121,696.07 | 7,470,870.31 | 293,062.30 | 16,585.00 | 7,780,517.61 |
| 1891 | 4,160,099.07 | 944,938.65 | 5,105,037.72 | 318,333.42 | 5,849.00 | 5,429,220.14 |
| 1892 | 3,322,865.01 | 1,064,805.26 | 4,387,670.27 | 456,681.84 | 15,757.58 | 4,860,109.69 |
| 1893 | 3,193,280.64 | 998,184.65 | 4,191,465.29 | 284,752.65 | 3,516.20 | 4,479,734.14 |
| 1894 | 1,653,080.71 | 1,021,205.08 | 2,674,285.79 | 91,981.03 | 1,557.50 | 2,767,824.32 |
| 1895 | 1,116,090.07 | 750,710.59 | 1,866,800.66 | 149,879.48 | 16,773.89 | 2,033,454.03 |
| 1896 | 1,053,905.59 | 793,557.82 | 1,847,463.41 | 214,700.42 | 44,197.84 | 2,106,361.67 |
| 1897 | 917,911.19 | 678,469.55 | 1,596,380.74 | 438,716.31 | 52,834.23 | 2,087,931.28 |
| 1898 | 1,291,076.10 | 853,265.50 | 2,144,341.60 | 100,317.49 | 33,336.09 | 2,277,995.18 |
| 1899 | 1,703,988.32 | 890,702.17 | 2,594,690.49 | 442,913.73 | 32,533.12 | 3,070,137.34 |
| 1900 | 2,899,731.83 | 1,157,081.03 | 4,056,812.86 | 239,769.39 | 83,175.85 | 4,379,758.10 |
| 1901 | 2,966,542.86 | 1,340,894.29 | 4,307,437.15 | 585,661.27 | 79,062.37 | 4,972,160.79 |
| 1902 | 4,139,268.47 | 1,740,820.18 | 5,880,088.65 | 288,666.68 | 93,171.85 | 6,261,927.18 |
| 1903 | 8,960,471.18 | 1,597,147.48 | 10,557,618.66 | 308,939.14 | 158,185.85 | 11,024,743.65 |
| 1904 | 7,445,902.84 | 1,349,990.89 | 8,795,893.73 | 333,757.62 | 153,690.63 | 9,283,341.98 |
| 1905 | 4,849,766.06 | 1,286,621.93 | 6,136,387.88 | 791,807.67 | 89,615.72 | 7,017,811.38 |
| 1906 | 4,885,988.82 | 1,642,488.56 | 6,528,477.38 | 967,532.50 | 89,514.02 | 7,585,523.90 |
| 1907 | 7,728,114.30 | 1,819,159.21 | 9,547,273.51 | 1,892,805.70 | 113,098.79 | 11,553,178.00 |
| 1908 | 9,760,570.19 | 1,731,883.57 | 11,492,453.76 | 997,972.52 | 225,283.18 | 12,715,709.46 |
| 1909 | 7,698,337.03 | 1,536,890.67 | 9,235,227.70 | 2,334,885.47 | 330,136.61 | 12,216,415.39 |
| 1910 | 6,342,744.75 | 2,028,892.35 | 8,371,637.10 | 2,037,551.68 | 1,054,735.28 | 11,463,924.06 |
| 1911 | 5,783,693.39 | 1,461,514.30 | 7,195,187.69 | 2,822,600.71 | [1]1,022,119.20 | 11,089,927.60 |
| Total | | | | | | 446,005,525.17 |

[1] Includes reclamation water-right charges.

*Amounts accrued and paid to States on account of grants of 2, 3, and 5 per cent of net proceeds of sales of public lands for purposes of education or of making public roads and improvements.*

| States. | Total to June 30, 1909. | Fiscal year 1910. | Aggregate to June 30, 1910, inclusive. |
|---|---|---|---|
| **Alabama** | $1,075,654.85 | $749.18 | $1,076,404.03 |
| **Arkansas** | 317,356.12 | 1,676.80 | 319,032.92 |
| **California** | 1,032,896.35 | 15,718.58 | 1,048,614.93 |
| **Colorado** | 408,609.91 | 20,617.21 | 429,227.12 |
| **Florida** | 130,141.00 | 1,098.38 | 131,239.38 |
| **Idaho** | 206,723.75 | 13,440.14 | 220,163.89 |
| **Illinois** | 1,187,908.89 | | 1,187,908.89 |
| **Indiana** | 1,040,255.26 | | 1,040,255.26 |
| **Iowa** | 633,638.10 | | 633,638.10 |
| **Kansas** | 1,112,245.88 | 6,180.63 | 1,118,426.51 |
| **Louisiana** | 467,253.06 | 179.75 | 467,432.81 |
| **Michigan** | 586,186.19 | 393.77 | 586,579.96 |
| **Minnesota** | 574,081.29 | 7,995.76 | 582,077.05 |
| **Mississippi** | 1,069,843.91 | | 1,069,843.91 |
| **Missouri** | 1,057,166.94 | 1,803.49 | 1,058,970.43 |
| **Montana** | 300,651.88 | 31,658.77 | 332,310.65 |
| **Nebraska** | 540,376.95 | 4,538.07 | 544,915.02 |
| **Nevada** | 23,324.27 | 2,660.55 | 25,984.82 |
| **New Mexico** | 72,076.23 | 23,293.48 | 95,369.71 |
| **North Dakota** | 433,905.92 | 39,448.72 | 473,354.64 |
| **Ohio** | 999,353.01 | | 999,353.01 |
| **Oklahoma** | 38,643.63 | 11,484.23 | 50,127.86 |
| **Oregon** | 675,370.05 | 13,532.09 | 688,902.14 |
| **South Dakota** | 178,438.36 | 35,069.76 | 213,508.12 |
| **Utah** | 54,286.50 | 17,310.06 | 71,596.56 |
| **Washington** | 367,700.54 | 13,018.42 | 380,718.96 |
| **Wisconsin** | 586,046.08 | 91.52 | 586,137.60 |
| **Wyoming** | 160,185.06 | 14,442.56 | 174,627.62 |
| **Total** | 15,330,319.98 | 276,401.92 | 15,606,721.90 |

*Amounts covered into the Treasury to the credit of the reclamation fund from the sales of public lands and fees and commissions in the several States and Territories under the act of June 17, 1902 (32 Stat. L., 388).*

| States or Territories. | Fiscal years— | | Total for 10 years ended June 30, 1910. |
|---|---|---|---|
| | 1901 to 1909 | 1910 | |
| Arizona | $538,591.85 | $166,341.49 | $704,933.34 |
| California | 3,838,487.60 | 355,952.70 | 4,194,440.30 |
| Colorado | 4,410,107.05 | 734,356.07 | 5,144,463.12 |
| Idaho | 3,789,561.11 | 356,015.19 | 4,145,576.30 |
| Kansas | 615,716.51 | 138,949.26 | 754,665.77 |
| Montana | 4,614,954.26 | 983,721.32 | 5,598,675.58 |
| Nebraska | 1,073,023.57 | 142,367.50 | 1,215,391.07 |
| Nevada | 276,157.64 | 59,428.99 | 335,586.63 |
| New Mexico | 2,329,308.53 | 608,817.86 | 2,938,126.39 |
| North Dakota | 9,580,920.55 | 882,714.62 | 10,463,635.17 |
| Oklahoma | 5,266,323.43 | 254,481.44 | 5,520,804.87 |
| Oregon | 9,062,735.66 | 349,331.73 | 9,412,067.39 |
| South Dakota | 3,545,762.27 | 938,514.16 | 4,484,276.43 |
| Utah | 998,817.54 | 368,463.68 | 1,367,281.22 |
| Washington | 5,528,084.54 | 320,218.59 | 5,848,303.13 |
| Wyoming | 2,860,366.88 | 368,511.13 | 3,228,878.01 |
| Total | 58,328,918.99 | 7,028,185.73 | 65,357,104.72 |

*Amount of collections from reclamation water-right charges, etc., during the fiscal years ended June 30, 1908, 1909, 1910, and 1911.*

[No water-right charges collected prior to July 1, 1907.]

| States and land offices. | 1908 | 1909 | 1910 | 1911 |
|---|---|---|---|---|
| California: | | | | |
| Los Angeles | | | $42,269.51 | $10,602.48 |
| Idaho: | | | | |
| Hailey | $5, 06.18 | $7,703.66 | 184,332.69 | 180,470.71 |
| Montana: | | | | |
| Billings | 38,431.85 | 15,999.45 | 27,025.22 | 54,140.32 |
| Glasgow | | | 6,458.25 | 3,566.00 |
| Great Falls | 1,631.00 | 18,944.52 | 14,926.78 | 10,960.16 |
| Miles City | | 199.50 | 8,626.00 | 4,326.25 |
| Nebraska: | | | | |
| Alliance | | 4,767.47 | 68,667.09 | 26,092.00 |
| Nevada: | | | | |
| Carson City | 8,447.96 | 15,926.02 | 58,108.13 | 75,873.55 |
| New Mexico: | | | | |
| Roswell | | 7,626.75 | 72,483.60 | 70,949.35 |
| North Dakota: | | | | |
| Williston | 423.00 | 555.50 | 4,397.47 | 5,552.18 |
| Oregon: | | | | |
| La Grande | 350.00 | 6,114.60 | 61,011.44 | 73,658.17 |
| Lakeview | | 7,150.48 | 66,112.00 | 115,107.00 |
| South Dakota: | | | | |
| Bellefourche | | | 39,880.62 | 91,108.96 |
| Rapid City | | 6,969.26 | 60.00 | |
| Washington: | | | | |
| North Yakima | | 11,316.82 | 50,457.47 | 108,047.28 |
| Waterville | | 3,375.20 | 22,475.50 | 27,842.50 |
| Wyoming: | | | | |
| Cheyenne | | 14.00 | 3,839.80 | 571.40 |
| Lander | 8,412.53 | 52,827.70 | 39,465.83 | 38,550.99 |
| Total | 63,402.51 | 159,490.98 | 770,586.35 | 892,414.29 |
| Total to June 30, 1911 | | | | 1,885,894.08 |

### *Entries examined in General Land Office during fiscal year ended June 30, 1911.*

| Kinds of entries. | Pending June 30, 1910. | Received. | Total. | Approved. | Canceled. | Otherwise disposed of. | Total. | Pending June 30 1911. |
|---|---|---|---|---|---|---|---|---|
| Homesteads: | | | | | | | | |
| Original | 344,210 | 70,720 | 414,930 | ........ | 3,291 | 47,120 | 50,411 | 364,519 |
| Final | 10,194 | 26,777 | 36,971 | 26,926 | 152 | 1,119 | 28,197 | 8,774 |
| Commuted | 7,806 | 17,679 | 25,485 | 20,669 | 101 | 627 | 21,397 | 4,088 |
| Soldier's additional | 1,404 | 966 | 2,370 | 748 | 191 | ........ | 939 | 1,431 |
| Timber and stone | 967 | 1,343 | 2,310 | 1,614 | 4 | 86 | 1,704 | 606 |
| Desert land: | | | | | | | | |
| Original | 35,078 | 16,129 | 51,207 | ........ | 7,278 | 2,271 | 9,549 | 41,658 |
| Final | 3,794 | 2,273 | 6,067 | 2,760 | 15 | ........ | 2,775 | 3,292 |
| Year proofs examined | ........ | ........ | ........ | ........ | ........ | ........ | 7,599 | ........ |
| Assignments examined | ........ | ........ | ........ | ........ | ........ | ........ | 1,222 | ........ |
| Extension of time examined | ........ | ........ | ........ | ........ | ........ | ........ | 1,544 | ........ |
| Mineral, final | 1,247 | 1,102 | 2,349 | 823 | 85 | ........ | 908 | 1,441 |
| Coal, final | 404 | 124 | 528 | 130 | 8 | ........ | 138 | 390 |
| Timber culture: | | | | | | | | |
| Original | 62 | ........ | 62 | ........ | 47 | ........ | 47 | 15 |
| Final | 160 | 1 | 161 | 14 | 12 | ........ | 26 | 135 |
| Preemption, final | 254 | 293 | 547 | 275 | ........ | ........ | 275 | 272 |
| Indian allotments | 1,794 | 5,049 | 6,843 | 2,893 | 23 | ........ | 2,916 | 3,927 |
| Indian homesteads | ........ | 19 | 19 | 19 | ........ | ........ | 19 | ........ |
| Town sites | 3 | 9 | 12 | 10 | ........ | ........ | 10 | 2 |
| Town lots | 249 | 599 | 848 | 650 | 3 | ........ | 653 | 195 |
| Public sales (isolated tracts) | 1,499 | 4,210 | 5,709 | 4,316 | 2 | 136 | 4,454 | 1,255 |
| Lieu selections (act June 4, 1897) | 1,150 | 140 | 1,290 | 406 | 54 | ........ | 460 | 830 |
| Military bounty land warrants | 956 | 127 | 1,083 | 107 | ........ | 210 | 317 | 766 |
| Miscellaneous entries | 4,926 | 2,825 | 7,751 | 1,974 | 31 | 413 | 2,418 | 5,333 |

### *State and Territorial grants, fiscal year ended June 30, 1911.*

| Kinds. | Pending and received. | | | Disposed of. | | | Pending June 30, 1911. |
|---|---|---|---|---|---|---|---|
| | On hand July 1, 1910. | Since received. | Total. | Approved. | Canceled. | Total. | |
| | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* |
| School selections | 1,708,031.37 | 454,947.56 | 2,162,978.93 | 299,123.17 | 28,440.01 | 327,563.18 | 1,835,415.75 |
| University selections | 28,543.01 | 47,734.93 | 76,277.94 | 1,037.28 | 50,452.32 | 51,489.60 | 24,788.34 |
| Agricultural-college selections | 16,060.09 | 1,245.38 | 17,305.47 | 1,480.00 | 120.00 | 1,600.00 | 15,705.47 |
| Improvement of the Rio Grande | .......... | 320.00 | 320.00 | .......... | .......... | .......... | 320.00 |
| Internal-improvement selections | 200.07 | 494.38 | 694.45 | 39.57 | 454.81 | 494.38 | 200.07 |
| Public buildings | 9,507.77 | 1,081.76 | 10,589.53 | .......... | .......... | .......... | 10,589.53 |
| Insane asylums | 1,714.79 | .......... | 1,714.79 | 515.61 | .......... | 515.61 | 1,199.18 |
| Educational, charitable, etc | 19,426.48 | 160.00 | 19,586.48 | 280.00 | 319.63 | 599.63 | 18,986.85 |
| Deaf and dumb asylums | 2,926.32 | 986.78 | 3,913.10 | 712.11 | 40.00 | 752.11 | 3,160.99 |
| Reform schools | 1,307.63 | .......... | 1,307.63 | .......... | .......... | .......... | 1,307.63 |
| School of mines | 1,765.10 | 160.00 | 1,925.10 | .......... | 68.45 | 68.45 | 1,856.65 |
| Normal schools | 2,560.72 | 7,069.18 | 9,629.90 | 6,709.37 | 800.67 | 7,510.04 | 2,119.86 |
| Blind asylums | 318.30 | .......... | 318.30 | .......... | .......... | .......... | 318.30 |
| Reservoirs | 9,428.55 | .......... | 9,428.55 | 984.81 | 120.00 | 1,104.81 | 8,323.74 |
| Miners' hospitals | 829.05 | .......... | 829.05 | 314.70 | 40.00 | 354.70 | 474.35 |
| Forestry—Wisconsin | 892.78 | .......... | 892.78 | 852.78 | .......... | 852.78 | 40.00 |
| University preparatory school | 1,092.40 | .......... | 1,092.40 | 1,052.40 | .......... | 1,052.40 | 40.00 |
| Agricultural and mechanical college | 2,909.29 | 4,416.96 | 7,326.25 | 3,470.64 | 1,577.17 | 5,047.81 | 2,278.44 |
| Colored agricultural and normal university | 40.00 | 5,019.23 | 5,059.23 | .......... | 120.00 | 120.00 | 4,939.23 |
| Specific grant total | 99,522.35 | 68,688.60 | 168,210.95 | 17,449.27 | 54,113.05 | 71,562.32 | 96,648.63 |
| Grand total | 1,807,553.72 | 523,636.16 | 2,331,189.88 | 316,572.44 | 82,553.06 | 399,125.50 | 1,932,064.38 |

### *State and Territorial grants—Recapitulation.*

| States or Territories. | Indemnity school land. | | | Other grants. | | |
|---|---|---|---|---|---|---|
| | Pending and selected. | Confirmed. | Canceled. | Pending and selected. | Confirmed. | Canceled, |
| | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* |
| California | 452,979.72 | 4,048.97 | 5,907.98 | 454.81 | | 454.81 |
| Colorado | 38,923.77 | 6,069.13 | 40.00 | | | |
| Florida | 3,082.41 | 1,144.56 | | | | |
| Idaho | 230,874.98 | | 1,054.22 | 1,492.76 | | |
| Kansas | | | | 139.12 | 40.00 | |
| Louisiana | 1,432.52 | | 69.22 | 39.57 | 39.57 | |
| Mississippi | 644.28 | 160.56 | | 320.65 | | |
| Missouri | | | | 40.00 | | 40.00 |
| Montana | 253,033.91 | 11,498.67 | 1,360.00 | 2,580.40 | | |
| Nevada | | | | 200.07 | | |
| New Mexico | 545,973.64 | 106,391.90 | 11,749.58 | 52,413.14 | | 50,452.32 |
| North Dakota | 3,199.85 | | 717.26 | 1,944.17 | | |
| Oklahoma | 160.00 | | | 20,547.06 | 11,232.41 | 1,697.17 |
| Oregon | 66,680.16 | 20,315.01 | 460.74 | | | |
| South Dakota | 37,059.77 | 50.93 | 222.75 | | | |
| Utah | 351,962.17 | 140,904.63 | 3,552.60 | 56,676.95 | 2,841.08 | 1,029.12 |
| Washington | 45,237.56 | 5,839.43 | 160.00 | 293.35 | | |
| Wisconsin | | | | 892.78 | 852.78 | |
| Wyoming | 131,734.19 | 2,709.38 | 3,145.66 | 30,176.12 | 2,443.43 | 439.63 |
| Total | 2,162,978.93 | 299,123.17 | 28,440.01 | 168,210.95 | 17,449.27 | 54,113.05 |

### *Swamp land grants.*

#### LAND IN PLACE CLAIMS, ESTIMATED.

| | | Acres. |
|---|---|---|
| Pending and received: | | |
| On hand July 1, 1910 | | 659,319.12 |
| Received | | 47,387.76 |
| Total | | 707,706.88 |
| Disposed of: | | |
| Patented | 234,976.99 | |
| Rejected and canceled | 51,631.86 | |
| | | 286,608.95 |
| Pending June 30, 1911 | | 420,097.93 |

#### INDEMNITY, CASH AND LAND.

| | |
|---|---|
| On hand July 1, 1910 | 1,513,764.62 |
| Rejected and canceled | 13,520.00 |
| Pending June 30, 1911 | 1,500,244.62 |

### *State desert-land segregations under section 4 of the act of Aug. 18, 1894 (28 Stat., 372–422), and the acts amendatory thereof, commonly known as the Carey Act, during the fiscal year ended June 30, 1911.*

| States. | Applied for. | Segregated. | Rejected or relinquished. | Patented. | Reconveyed. | Time to reclaim extended. |
|---|---|---|---|---|---|---|
| | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* | *Acres.* |
| Colorado | 26,962.56 | 181,233.75 | 38,106.55 | | | |
| Idaho | 350,305.13 | 79,875.48 | 205,187.01 | 54,049.70 | | 51,178.46 |
| Montana | 9,148.00 | 160.00 | 116,881.56 | | [1] 10,104.03 | 10,104.03 |
| Nevada | | 26,562.57 | 24,123.79 | | | |
| New Mexico | | 7,564.68 | 2,600.00 | | | |
| Oregon | 86,979.24 | 232.90 | 87,165.04 | 1,280.00 | 6,014.49 | |
| Utah | 22,868.30 | 10,635.02 | 30,960.00 | | | |
| Wyoming | 479,265.38 | 22,530.27 | 36,762.26 | 5,209.82 | 160.00 | |
| Total | 975,528.61 | 328,794.67 | 508,696.21 | 60,539.52 | 16,278.52 | 61,282.49 |

[1] Remains segregated.

## RECAPITULATION.

| | Acres. | | Acres. |
|---|---|---|---|
| Applied for | 975,528.61 | Segregated | 328,794.67 |
| | | Relinquished or rejected | 508,696.21 |
| | | Acted on | 138,037.73 |
| | 975,528.61 | | 975,528.61 |

### *Lands certified or patented on account of railroad and wagon-road grants during the fiscal year ended June 30, 1911.*

| Railroads. | State. | Acres. |
|---|---|---|
| State grants: | | |
| Florida Central & Peninsular | Florida | 8,140.99 |
| St. Louis, Iron Mountain & Southern | Arkansas | 80.00 |
| Total | | 8,220.99 |
| Corporations: | | |
| Atlantic & Pacific (now Santa Fe Pacific) | Arizona | 41,711.22 |
| | New Mexico | 80.00 |
| Central Pacific (successors to California & Oregon) | California | 80.67 |
| Central Pacific | Nevada | 76,394.32 |
| Do | Utah | 14,616.51 |
| Northern Pacific | Idaho | 33,405.41 |
| Do | Minnesota | 5,267.11 |
| Do | Montana | 546,391.58 |
| Do | North Dakota | 4,844.74 |
| Do | Oregon | 18,144.64 |
| Do | Washington | 6,242.14 |
| Do | Wyoming | 920.00 |
| New Orleans Pacific | Louisiana | 765.94 |
| Southern Pacific (branch line) | California | 135,573.95 |
| Southern Pacific (main line) | do | 199,373.39 |
| Total of corporations | | 1,083,811.62 |
| Wagon roads: | | |
| California & Oregon Land Co. (successors to Oregon Central Military Road). | Oregon | 60,795.16 |

## RECAPITULATION.

| | Acres. |
|---|---|
| State grants | 8,220.99 |
| Corporations | 1,083,811.62 |
| Wagon roads | 60,795.16 |
| Grand total | 1,152,827.77 |
| Received: | |
| Railroad selections | 1,485,736.23 |
| Wagon-road selections | 5,634.74 |
| Total | 1,491,370.97 |

*Alleged fraudulent entries acted on during year.*

| Kinds of entries. | Pending June 30, 1910. | Received. | Disposed of. | | | | Pending June 30, 1911. | Hearings ordered by— | |
|---|---|---|---|---|---|---|---|---|---|
| | | | Approved. | Canceled. | Otherwise disposed of. | Total. | | General Land Office. | Forest Service. |
| Homestead: | | | | | | | | | |
| Originals | 14,940 | 8,427 | ........ | 3,431 | 3,096 | 6,527 | 16,840 | 2,174 | 48 |
| Finals | 257 | 5,887 | 2,629 | 58 | 542 | 3,229 | 2,915 | 40 | 2 |
| Cash | 482 | 2,953 | 2,864 | 74 | 436 | 3,374 | 61 | 17 | 1 |
| Desert Land: | | | | | | | | | |
| Originals | 1,498 | 1,271 | ........ | 313 | 1,396 | 1,709 | 1,060 | 79 | 1 |
| Finals | 446 | 258 | 2 | 19 | 210 | 231 | 473 | 21 | ........ |
| Timber culture: | | | | | | | | | |
| Originals | 49 | 65 | ........ | 4 | 6 | 10 | 104 | ........ | ........ |
| Finals | 106 | 16 | 8 | 10 | 20 | 38 | 84 | ........ | ........ |
| Timber and stone: | | | | | | | | | |
| Sworn statements | 1,995 | 225 | ........ | 108 | 306 | 414 | 1,806 | 39 | ........ |
| Cash | 564 | 402 | 724 | 17 | 206 | 947 | 19 | 16 | ........ |
| Mineral: | | | | | | | | | |
| Applications | 1,146 | 219 | ........ | 9 | 396 | 405 | 960 | 36 | 1 |
| Finals | 609 | 228 | ........ | 12 | 258 | 270 | 567 | 237 | 4 |
| Selections: | | | | | | | | | |
| State | 329 | 298 | ........ | 6 | 253 | 259 | 368 | 14 | ........ |
| Forest | 439 | 889 | ........ | 25 | 312 | 337 | 991 | 149 | 1 |
| Indian allotments | 35 | 49 | ........ | ........ | 9 | 9 | 75 | ........ | ........ |
| Squatter claims | 135 | 12 | ........ | 9 | 17 | 26 | 121 | 10 | 4 |
| Mineral locations | 274 | 10 | ........ | 12 | 47 | 59 | 225 | 176 | 2 |
| Soldiers' additional | ........ | 2,144 | 422 | 291 | ........ | 713 | 1,431 | ........ | ........ |
| Total | 23,304 | 23,353 | 6,649 | 4,398 | 7,510 | 18,557 | 28,100 | 3,008 | 64 |

*Field reports on alleged fraudulent entries.*

| | |
|---|---|
| Field: | |
| Forester— | |
| Adverse | 90 |
| Favorable | 181 |
| Agents— | |
| Adverse | 10,022 |
| Favorable | 16,483 |

*Indictments, convictions, acquittals and dismissals, fines imposed and paid, and prison sentences, June 30, 1910, to June 30, 1911.*

| Offenses. | Indictments. | Convictions. | Prison sentences. | Fines imposed. | Fines paid. | Acquittals and dismissals. |
|---|---|---|---|---|---|---|
| Timber trespass | 24 | 31 | 6 | $8,227.00 | $1,640.18 | 160 |
| Conspiracy | 90 | 21 | 17 | 20,050.00 | 9,200.00 | 105 |
| Perjury | 20 | 8 | 6 | 2,150.00 | 1,900.00 | 66 |
| Unlawful inclosures | 53 | 47 | ........ | 5,769.00 | 4,377.60 | 11 |
| Miscellaneous | ........ | ........ | ........ | ........ | ........ | ........ |
| Subornation of perjury | 5 | ........ | ........ | ........ | ........ | 7 |
| Impersonating Government agent | 5 | 1 | 1 | ........ | ........ | 1 |
| Intimidating homesteaders | 21 | 7 | 10 | 4,229.78 | 2,679.78 | ........ |
| Using mails to defraud | 8 | 3 | 3 | ........ | ........ | ........ |
| Section 31, Penal Code | 2 | 2 | 1 | 75.00 | ........ | ........ |
| Section 39, Penal Code | 2 | ........ | ........ | ........ | ........ | ........ |
| Section 132, Penal Code | 3 | ........ | ........ | ........ | ........ | ........ |
| Removing Government corner stone | 1 | ........ | ........ | ........ | ........ | 1 |
| Section 134, Penal Code | ........ | 3 | 3 | ........ | ........ | ........ |
| Forgery | 1 | ........ | ........ | ........ | ........ | 3 |
| Setting forest fires | 1 | ........ | ........ | ........ | ........ | 1 |
| Failure to obey subpoena | ........ | 1 | ........ | 40.00 | 40.00 | ........ |
| Section 4746 | ........ | ........ | ........ | ........ | ........ | 20 |
| Misuse of funds | ........ | ........ | ........ | ........ | ........ | 1 |
| Offering bribe | ........ | ........ | ........ | ........ | ........ | 1 |
| Total | 236 | 124 | 47 | 40,540.78 | 19,837.56 | 377 |

*Class, number, and area of patents issued during fiscal year ended June 30, 1911.*

| Classes. | Number. | Area. | Classes. | Number. | Area. |
|---|---|---|---|---|---|
| | | *Acres.* | | | *Acres.* |
| Commuted homestead | 22,156 | 3,267,442.857 | Small holding claim | 187 | 11,781.829 |
| Timber and stone | 2,403 | 294,757.23 | Railroad | 76 | 1,142,485.21 |
| Public sale | 4,876 | 478,296.79 | Swamp | 21 | 224,554.27 |
| Cash, miscellaneous | 895 | 82,367.242 | Sioux half-breed scrip | 6 | 876.98 |
| Desert land | 2,789 | 434,888.15 | Choctaw scrip | 2 | 157.26 |
| Town site | 8 | 1,122.20 | Valentine scrip | 6 | 195.17 |
| Town lot | 627 | 420.231 | Cherokee school land | 3 | 160.61 |
| Homestead | 29,920 | 5,301,686.241 | Porterfield scrip | 1 | 40.00 |
| Soldiers' additional homestead | 735 | 39,714.666 | State desert-land segregation | 8 | 60,659.52 |
| Forest homestead | 127 | 14,246.693 | Abandoned military reservation | 297 | 17,494.63 |
| Indian homestead | 9 | 917.90 | Cemetery site | 3 | 160.00 |
| Reclamation homestead | 1 | 80.00 | Mission site | 4 | 830.52 |
| Military bounty land warrant | 85 | 5,537.91 | Umatilla Indian land | 97 | 16,276.72 |
| Forest lieu selection | 560 | 97,182.03 | Isaac Crow lieu | 13 | 780.56 |
| Timber culture | 19 | 2,880.00 | White Earth town lot | ........ | 65.36 |
| Commuted timber culture | 1 | 160.00 | Special and miscellaneous acts | 199 | 113,733.66 |
| Indian trust | 4,990 | 575,309.57 | | | |
| Mineral | 905 | 45,725.516 | | | |
| Coal | 141 | 18,757.08 | Total | 72,189 | 12,272,495.435 |
| Private land claim | 19 | 20,750.83 | | | |

| | |
|---|---|
| Cases approved and awaiting patent July 1, 1910 | 5,047 |
| Cases received for patenting during the year | 71,286 |
| Total | 76,333 |
| Acreage of Indian fee patents not included in the above | 215,796.971 |

*Entries made and expenses incurred at district land offices during fiscal year ended June 30, 1911.*

| Locations. | Number of applications, entries, etc. (original and final). | Area (acres). | | | Receipts. | | | | | Expenses. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Entered. | | Patented. | Fees and commissions. | Sales of land. | | | Total. | Salaries and commissions of registers and receivers. | Incidental expenses. | Total. |
| | | Original. | Final. | | | Public. | Indian. | Reclamation water-right charges, reclamation town sites, etc. | | | | |
| Alabama: | | | | | | | | | | | | |
| Montgomery | 1,275 | 49,198.84 | 47,920.66 | 71,492.750 | $7,526.91 | $20,681.75 | $600.37 | ............ | $28,809.03 | $5,272.48 | $1,275.35 | $6,547.83 |
| Alaska: | | | | | | | | | | | | |
| Fairbanks | 5 | ............ | ............ | 265.490 | 50.00 | ............ | ............ | ............ | 50.00 | ............ | 132.00 | 132.00 |
| Juneau | 81 | 14,526.54 | 77.06 | 2,573.652 | 464.30 | 133,173.81 | ............ | ............ | 133,638.11 | 5,488.84 | 1,086.90 | 6,575.74 |
| Nome | 20 | 951.15 | ............ | 1,337.938 | 150.00 | 3,440.04 | ............ | ............ | 3,590.04 | 136.64 | 242.50 | 379.14 |
| Arizona: | | | | | | | | | | | | |
| Phoenix | 2,624 | 486,066.86 | 62,414.25 | 215,153.676 | 22,723.33 | 128,988.30 | 9,415.25 | ............ | 161,126.88 | 6,000.00 | 5,276.59 | 11,276.59 |
| Arkansas: | | | | | | | | | | | | |
| Camden | 948 | 35,775.76 | 51,743.96 | 72,518.31 | 6,498.56 | 8,471.24 | ............ | ............ | 14,969.80 | 4,912.84 | 1,407.25 | 6,320.19 |
| Harrison | 1,640 | 100,479.51 | 65,417.01 | 90,909.12 | 12,859.55 | 9,160.47 | ............ | ............ | 22,020.02 | 6,000.00 | 2,611.87 | 8,611.87 |
| Little Rock | 1,422 | 64,750.73 | 60,475.21 | 84,018.05 | 9,963.60 | 92,118.96 | ............ | ............ | 102,082.56 | 5,999.56 | 2,950.08 | 8,949.64 |
| Railroad, Indian, and private land grants | ............ | ............ | ............ | 3,361.24 | ............ | ............ | ............ | ............ | ............ | ............ | ............ | ............ |
| California. | | | | | | | | | | | | |
| Eureka | 304 | 16,387.19 | 9,290.92 | 16,545.873 | 2,701.95 | 22,925.14 | 205.97 | ............ | 25,833.06 | 3,450.43 | 300.00 | 3,750.43 |
| Independence | 458 | 87,863.42 | 1,360.00 | 2,611.202 | 3,566.45 | 20,431.32 | ............ | ............ | 23,997.77 | 3,331.19 | 240.73 | 3,571.92 |
| Los Angeles | 2,684 | 581,565.18 | 65,369.69 | 144,082.668 | 16,175.52 | 132,401.03 | 3,153.86 | $10,602.48 | 162,332.89 | 6,000.00 | 7,734.33 | 13,734.33 |
| Oakland | 558 | 45,410.84 | 13,876.59 | 38,241.810 | 6,004.38 | 35,481.51 | 1,225.61 | ............ | 42,711.50 | 5,000.00 | 2,517.80 | 7,517.80 |
| Redding | 360 | 78,341.21 | 10,724.69 | 28,657.34 | 5,270.22 | 21,314.89 | ............ | ............ | 26,585.11 | 5,376.38 | 1,091.42 | 6,467.80 |
| Sacramento | 712 | 73,339.58 | 20,278.73 | 35,486.663 | 8,670.95 | 30,910.14 | ............ | ............ | 39,581.09 | 6,000.00 | 2,361.00 | 8,361.00 |
| San Francisco | 129 | 11,026.86 | 3,937.67 | 362.54 | 1,557.20 | 6,856.03 | 174.40 | ............ | 8,587.63 | 1,000.00 | 453.00 | 1,453.00 |
| Susanville | 455 | 66,657.84 | 11,970.92 | 21,594.71 | 3,526.34 | 17,693.06 | ............ | ............ | 21,219.40 | 5,169.78 | 1,925.30 | 7,095.08 |
| Visalia | 755 | 101,413.06 | 11,092.25 | 15,678.81 | 7,599.27 | 44,752.05 | ............ | ............ | 52,351.32 | 6,000.00 | 1,681.62 | 7,681.62 |
| Railroad, Indian, and private land grants | ............ | ............ | ............ | 337,087.59 | ............ | ............ | ............ | ............ | ............ | ............ | ............ | ............ |
| Colorado: | | | | | | | | | | | | |
| Del Norte | 491 | 79,732.52 | 21,848.79 | 18,163.453 | 3,507.75 | 27,259.08 | ............ | ............ | 30,766.83 | 3,562.56 | 294.45 | 3,857.01 |
| Denver | 2,536 | 303,216.00 | 97,002.73 | 118,479.527 | 27,787.32 | 104,921.75 | ............ | ............ | 132,709.07 | 6,000.00 | 5,842.65 | 11,842.65 |
| Durango | 348 | 23,139.69 | 9,736.82 | 41,939.137 | 5,694.34 | 18,442.23 | 11,583.43 | ............ | 35,720.00 | 5,229.76 | 1,497.25 | 6,727.01 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Glenwood Springs | 571 | 48,702.25 | 20,867.75 | 20,216.924 | 8,080.45 | 18,281.89 | 23,992.52 | | 50,354.86 | 5,725.00 | 2,100.42 | 7,825.42 |
| Hugo | 1,470 | 200,307.32 | 77,142.63 | 21,448.25 | 25,126.41 | 43,419.20 | | | 68,545.61 | 5,500.00 | 3,421.83 | 8,921.83 |
| Lamar | 2,686 | 503,768.97 | 30,737.83 | 48,376.57 | 37,473.68 | 53,585.16 | | | 91,058.84 | 6,000.00 | 2,685.74 | 8,685.74 |
| Leadville | 144 | 6,730.19 | 1,000.91 | 4,878.013 | 1,205.75 | 4,881.00 | | | 6,086.75 | 1,968.35 | 37.45 | 2,005.80 |
| Montrose | 293 | 26,903.97 | 4,995.58 | 16,144.619 | 6,561.78 | 5,642.37 | 60,441.89 | | 72,646.04 | 6,000.00 | 3,780.50 | 9,780.50 |
| Pueblo | 2,950 | 425,614.08 | 90,647.12 | 28,855.977 | 33,254.45 | 116,228.75 | | | 149,483.20 | 6,000.00 | 4,184.64 | 10,184.64 |
| Sterling | 2,896 | 511,416.32 | 54,029.05 | 10,822.65 | 40,222.24 | 58,273.41 | | | 98,495.65 | 6,000.00 | 4,020.00 | 10,020.00 |
| Railroad, Indian, and private land grants | | | | 220.662 | | | | | | | | |
| **Florida:** | | | | | | | | | | | | |
| Gainesville | 2,316 | 144,809.48 | 91,648.37 | 111,716.26 | 17,944.88 | 46,748.11 | | | 64,692.99 | 6,000.00 | 5,527.50 | 11,527.50 |
| **Idaho:** | | | | | | | | | | | | |
| Blackfoot | 2,319 | 324,787.17 | 80,698.00 | 150,829.559 | 26,183.62 | 71,027.54 | 1,370.00 | | 98,581.16 | 6,000.00 | 3,752.25 | 9,752.25 |
| Boise | 2,004 | 193,704.21 | 82,005.10 | 86,044.409 | 15,429.82 | 61,395.95 | | | 76,825.77 | 6,000.00 | 3,834.28 | 9,834.28 |
| Coeur d'Alene | 806 | 68,496.04 | 35,875.98 | 47,954.245 | 18,961.77 | 39,761.87 | 109,803.11 | | 168,526.75 | 6,000.00 | 3,326.05 | 9,326.05 |
| Hailey | 1,532 | 465,339.69 | 65,110.34 | 56,047.401 | 14,950.33 | 66.518.26 | | 180,470.71 | 261,939.30 | 6,000.00 | 5,653.92 | 11,653.92 |
| Lewiston | 753 | 47,463.90 | 43,697.69 | 56,082.638 | 7,057.98 | 34,768.66 | | | 41,826.59 | 5,956.18 | 2,544.75 | 8,500.93 |
| Railroad, Indian, and private land grants | | | | 31,793.21 | | | | | | | | |
| **Illinois** | | | | 2,967.28 | | | | | | | | |
| **Indiana** | | | | 1,263.67 | | | | | | | | |
| **Iowa** | | | | 604.04 | | | | | | | | |
| **Kansas:** | | | | | | | | | | | | |
| Dodge City | 1,566 | 94,201.57 | 137,482.11 | 171,528.34 | 13,517.34 | 73,282.65 | 4,281.13 | | 91,081.12 | 6,000.00 | 4,429.83 | 10,429.83 |
| Topeka | 660 | 26,513.09 | 66,916.21 | 77,080.00 | 6,019.21 | 11,559.22 | 20.22 | | 17,598.65 | 5,872.68 | 14.00 | 5,886.68 |
| Railroad, Indian, and private land grants | | | | 1,318.14 | | | | | | | | |
| **Louisiana:** | | | | | | | | | | | | |
| Baton Rouge | 176 | 3,635.13 | 5,792.42 | 710.98 | 1,324.52 | 3,648.42 | | | 4,972.94 | 1,307.52 | 656.30 | 1,963.82 |
| Natchitoches | 230 | 8,992.50 | 8,038.59 | 13,366.76 | 1,743.05 | 1,991.75 | | | 3,734.80 | 1,783.78 | 483.75 | 2,267.53 |
| New Orleans | 374 | 11,805.00 | 15,984.83 | 29,499.11 | 2,634.57 | 7,256.46 | | | 9,891.03 | 2,540.45 | 1,084.67 | 3,625.12 |
| Railroad, Indian, and private land grants | | | | 2,417.27 | | | | | | | | |
| **Michigan:** | | | | | | | | | | | | |
| Marquette | 339 | 17,189.17 | 10,681.54 | 20,011.413 | 3,262.30 | 6,288.39 | | | 9,550.69 | 3,144.05 | 1,179.77 | 4,323.82 |
| Railroad, Indian, and private land grants | | | | 1,400.00 | | | | | | | | |
| **Minnesota:** | | | | | | | | | | | | |
| Cass Lake | 401 | 14,401.19 | 25,041.00 | 269,720.19 | 7,707.72 | 13,215.64 | 29,733.89 | | 50,657.25 | 6,000.00 | 3,779.10 | 9,779.10 |
| Crookston | 203 | 8,962.90 | 19,079.54 | 126,163.12 | 14,255.56 | 2,307.46 | 80,739.16 | | 97,302.18 | 6,000.00 | 2,196.25 | 8,196.25 |
| Duluth | 1,562 | 62,542.56 | 65,536.08 | 147,648.29 | 10,938.22 | 74,293.16 | 6,125.28 | | 91,356.66 | 6,000.00 | 4,019.00 | 10,019.00 |
| Railroad, Indian, and private land grants | | | | 38,544.66 | | | | | | | | |
| **Mississippi:** | | | | | | | | | | | | |
| Jackson | 747 | 34,440.75 | 25,901.37 | 52,365.03 | 5,794.02 | 6,536.30 | | | 12,330.32 | 4,134.64 | 2,251.25 | 6,385.89 |
| **Missouri:** | | | | | | | | | | | | |
| Springfield | 772 | 19,292.74 | 37,233.32 | 72,734.052 | 4,154.59 | 18,959.43 | | | 23,114.02 | 4,071.86 | 1,241.40 | 5,313.26 |

*Entries made and expenses incurred at district land offices during fiscal year ended June 30, 1911*—Continued.

| Locations. | Number of applications, entries etc. (original and final). | Area (acres). | | | Receipts. | | | | | Expenses. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Entered. | | Patented. | Fees and commissions. | Sales of land. | | | Total. | Salaries and commissions of registers and receivers. | Incidental expenses. | Total. |
| | | Original. | Final. | | | Public. | Indian. | Reclamation water, right charges, reclamation town sites, etc. | | | | |
| **Montana:** | | | | | | | | | | | | |
| Billings | 797 | 136,861.42 | 19,346.03 | 42,047.92 | $12,783.05 | $30,769.08 | $215,113.33 | $54,140.32 | $312,805.78 | $6,000.00 | $3,159.50 | $9,159.50 |
| Boseman | 1,329 | 191,843.13 | 38,366.34 | 73,829.451 | 20,028.24 | 45,056.67 | | | 65,084.91 | 6,000.00 | 1,912.00 | 7,912.00 |
| Glasgow | 2,065 | 409,793.86 | 63,804.08 | 46,899.934 | 23,405.40 | 40,576.45 | 25,857.25 | 3,566.00 | 93,405.10 | 6,000.00 | 3,808.12 | 9,808.12 |
| Great Falls | 4,906 | 835,673.60 | 106,214.12 | 117,476.765 | 67,935.69 | 122,700.07 | | 10,960.16 | 201,595.92 | 6,000.00 | 8,296.00 | 14,296.00 |
| Havre | 2,498 | 516,290.22 | 23,044.31 | 12,028.55 | 37,899.67 | 37,683.09 | | | 75,582.76 | 6,000.00 | 5,375.92 | 11,375.92 |
| Helena | 1,498 | 175,423.47 | 37,925.34 | 64,148.199 | 16,904.36 | 84,076.91 | | | 100,981.27 | 6,000.00 | 3,542.43 | 9,542.43 |
| Kalispell | 780 | 78,879.66 | 11,561.46 | 18,096.625 | 9,255.46 | 6,433.82 | 49,095.70 | | 64,784.98 | 5,431.11 | 1,141.05 | 6,572.16 |
| Lewistown | 3,845 | 452,540.81 | 133,682.34 | 181,823.273 | 36,072.38 | 233,054.69 | | | 269,127.07 | 6,000.00 | 4,987.03 | 10,987.03 |
| Miles City | 3,048 | 1,385,723.97 | 77,260.19 | 64,339.63 | 64,774.90 | 119,826.58 | | 4,326.25 | 188,927.73 | 6,000.00 | 5,083.56 | 11,083.56 |
| Missoula | 1,222 | 74,272.38 | 11,065.54 | 18,620.200 | 9,049.94 | 7,194.50 | 54,038.78 | | 70,283.22 | 5,388.80 | 2,553.00 | 7,941.80 |
| Railroad Indian, and private land grants | | | | 548,001.83 | | | | | | | | |
| **Nebraska:** | | | | | | | | | | | | |
| Alliance | 2,038 | 470,728.81 | 428,621.16 | 457,107.920 | 18,544.13 | 55,670.40 | | 26,092.00 | 100,306.53 | 6,000.00 | 4,743.17 | 10,743.17 |
| Broken Bow | 1,518 | 467,058.43 | 224,746.73 | 329,341.78 | 14,482.06 | 42,255.46 | | | 56,737.52 | 6,000.00 | 1,534.50 | 7,534.50 |
| Lincoln | 291 | 26,672.99 | 57,590.52 | 121,380.828 | 2,072.35 | 4,298.50 | 77.72 | | 6,448.57 | 2,454.40 | 18.70 | 2,473.10 |
| North Platte | 891 | 94,650.38 | 170,951.95 | 338,892.48 | 8,822.48 | 10,719.42 | | | 19,541.90 | 6,000.00 | 1,608.20 | 7,608.20 |
| O'Neill | 762 | 102,809.01 | 169,045.37 | 330,089.07 | 6,652.40 | 10,681.93 | 821.00 | | 18,155.33 | 5,253.34 | 1,419.10 | 6,672.44 |
| Valentine | 1,508 | 343,609.18 | 317,139.61 | 507,686.46 | 13,240.25 | 20,465.60 | | | 33,705.85 | 6,000.00 | 1,871.80 | 7,871.80 |
| Railroad, Indian, and private land grants | | | | 1,225.54 | | | | | | | | |
| **Nevada:** | | | | | | | | | | | | |
| Carson City | 1,110 | 312,510.88 | 8,156.70 | 33,203.810 | 11,180.04 | 77,288.08 | | 75,873.55 | 164,341.67 | 6,000.00 | 3,017.00 | 9,017.00 |
| Railroad, Indian, and private land grants | | | | 76,394.32 | | | | | | | | |
| **New Mexico:** | | | | | | | | | | | | |
| Clayton | 1,658 | 274,726.95 | 57,593.27 | 71,843.23 | 23,990.17 | 39,972.82 | | | 63,962.99 | 6,000.00 | 4,381.00 | 10,381.00 |
| Fort Sumner | 1,248 | 118,108.71 | 42,706.09 | 52,602.81 | 14,220.25 | 37,787.25 | | | 52,007.50 | 4,500.00 | 4,173.98 | 8,673.98 |
| Las Cruces | 1,259 | 176,657.62 | 37,318.99 | 48,570.564 | 9,658.85 | 54,463.79 | | | 64,122.64 | 6,000.00 | 2,996.90 | 8,996.90 |
| Roswell | 2,104 | 412,155.90 | 88,981.97 | 113,638.84 | 25,892.65 | 75,173.01 | | 70,949.35 | 172,015.01 | 6,000.00 | 5,309.48 | 11,309.48 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Santa Fe | 2,127 | 224,879.04 | 106,837.85 | 145,854.775 | 20,261.10 | 75,673.11 | ... | ... | 95,934.21 | 6,000.00 | 6,278.67 | 12,278.67 |
| Tucumcari | 1,493 | 160,934.85 | 88,106.79 | 94,039.24 | 16,814.63 | 58,033.16 | ... | ... | 74,847.79 | 6,000.00 | 5,509.66 | 11,509.66 |
| Railroad, Indian, and private land grants | ... | ... | ... | 165,534.83 | ... | ... | ... | ... | ... | ... | ... | ... |
| North Dakota: | | | | | | | | | | | | |
| Bismarck | 2,443 | 77,586.01 | 263,486.91 | 304,688.01 | 21,204.36 | 129,746.68 | ... | ... | 150,951.04 | 5,797.50 | 4,234.20 | 10,031.70 |
| Devils Lake | 563 | 20,362.19 | 43,273.18 | 73,178.63 | 4,069.63 | 23,007.55 | 16,268.11 | ... | 43,345.29 | 4,079.72 | 1,181.05 | 5,260.79 |
| Dickinson | 3,011 | 217,188.09 | 266,110.34 | 128,976.70 | 30,195.38 | 224,477.31 | ... | ... | 254,672.69 | 6,000.00 | 5,607.92 | 11,607.92 |
| Fargo | 470 | 11,590.39 | 50,435.96 | 58,644.09 | 3,681.83 | 25,146.29 | ... | ... | 28,828.12 | 4,443.66 | 466.40 | 4,910.06 |
| Minot | 1,073 | 23,011.29 | 123,795.75 | 139,270.18 | 5,539.71 | 66,997.01 | ... | ... | 72,536.12 | 6,000.00 | 4,284.75 | 10,284.75 |
| Williston | 2,870 | 162,250.50 | 297,839.88 | 277,169.38 | 20,832.52 | 213,548.55 | ... | 5,552.18 | 239,933.25 | 6,000.00 | 5,319.25 | 11,319.25 |
| Railroad, Indian, and private land grants | ... | ... | ... | [1] 115,641.93 | ... | ... | ... | ... | ... | ... | ... | ... |
| Ohio | ... | ... | ... | 160.00 | ... | ... | ... | ... | ... | ... | ... | ... |
| Oklahoma: | | | | | | | | | | | | |
| El Reno | 211 | 2,991.74 | 7,254.47 | 22,544.90 | 1,518.13 | 1,511.18 | 60,816.98 | ... | 63,546.29 | 1,186.45 | 566.57 | 1,753.02 |
| Guthrie | 709 | 22,381.98 | 65,930.07 | 88,531.973 | 4,884.15 | 16,990.55 | 4,884.21 | ... | 26,758.91 | 4,315.12 | 4,955.00 | 9,270.12 |
| Lawton | 719 | 36,307.61 | 55,100.26 | 135,490.981 | 7,125.54 | 25,592.05 | 588,906.52 | ... | 621,624.11 | 5,905.24 | 3,509.40 | 9,414.64 |
| Woodward | 3,280 | 72,387.90 | 425,570.37 | 454,226.56 | 20,157.86 | 79,750.73 | ... | ... | 99,908.59 | 6,000.00 | 5,931.00 | 11,931.00 |
| Oregon: | | | | | | | | | | | | |
| Burns | 770 | 88,300.23 | 23,465.62 | 43,627.01 | 6,868.73 | 44,622.06 | ... | ... | 51,490.79 | 5,437.10 | 1,865.40 | 7,302.50 |
| La Grande | 1,282 | 92,792.16 | 60,604.88 | 105,232.320 | 12,191.27 | 59,746.42 | 6,441.93 | 73,658.17 | 152,037.79 | 6,000.00 | 3,363.00 | 9,363.00 |
| Lakeview | 854 | 107,837.20 | 19,428.08 | 46,259.34 | 9,188.84 | 33,788.46 | ... | 115,107.00 | 158,084.30 | 6,000.00 | 1,830.91 | 7,830.91 |
| Portland | 544 | 43,032.76 | 15,944.20 | 23,263.27 | 6,081.65 | 17,905.12 | ... | ... | 23,986.77 | 4,671.96 | 2,660.69 | 7,332.65 |
| Roseburg | 1,025 | 61,883.71 | 33,995.53 | 44,891.086 | 10,154.18 | 57,641.62 | ... | ... | 67,795.80 | 5,916.67 | 3,418.40 | 9,335.07 |
| The Dalles | 2,068 | 266,838.43 | 54,241.49 | 109,487.48 | 23,350.19 | 66,435.64 | ... | ... | 89,785.83 | 6,000.00 | 3,589.27 | 9,589.27 |
| Vale | 499 | 72,772.66 | 16,040.46 | 10,163.85 | 5,043.29 | 15,359.42 | ... | ... | 20,402.71 | 3,980.30 | 2,310.44 | 6,290.74 |
| Railroad, Indian, and private land grants | ... | ... | ... | 89,446.47 | ... | ... | ... | ... | ... | ... | ... | ... |
| South Dakota: | | | | | | | | | | | | |
| Aberdeen | 2,446 | 263,886.31 | 14,352.50 | 27,802.59 | 25,350.08 | 7,078.83 | 209,143.97 | ... | 241,572.88 | 6,000.00 | 2,507.68 | 8,507.68 |
| Bellefourche | 2,451 | 273,769.87 | 99,495.11 | 80,038.92 | 21,371.36 | 94,231.62 | ... | 91,103.95 | 206,706.93 | 6,000.00 | 5,767.03 | 11,767.03 |
| Chamberlain | 1,112 | 32,444.27 | 127,142.66 | 160,366.52 | 6,069.25 | 56,697.77 | ... | ... | 62,767.02 | 5,999.71 | 3,133.98 | 9,733.69 |
| Gregory | 98 | 3,846.43 | 5,586.55 | 168,235.52 | 12,077.24 | 4,321.10 | 851,833.00 | ... | 868,231.34 | 6,000.00 | 2,459.60 | 8,419.60 |
| Lemmon | 4,723 | 240,190.69 | 430,906.29 | 348,053.11 | 39,756.26 | 335,616.41 | 86,686.09 | ... | 462,058.76 | 5,908.33 | 6,960.75 | 12,869.08 |
| Pierre | 2,103 | 74,688.19 | 232,904.79 | 335,417.37 | 10,977.27 | 106,367.55 | 8,867.73 | ... | 126,212.55 | 6,000.00 | 3,453.75 | 9,453.75 |
| Rapid City | 4,352 | 308,584.40 | 427,228.86 | 453,240.414 | 30,270.19 | 401,419.90 | ... | ... | 431,690.09 | 6,000.00 | 7,151.75 | 13,151.75 |
| Timber Lake | 201 | 643.82 | 1,693.37 | ... | 5,095.82 | 899.04 | 33,665.07 | ... | 39,659.93 | 1,000.00 | 687.73 | 1,687.73 |
| Railroad, Indian, and private land grants | ... | ... | ... | 266,924.47 | ... | ... | ... | ... | ... | ... | ... | ... |

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[1] Of which 73,914.80 came from Lemmon, S. Dak.

*Entries made and expenses incurred at district land offices during fiscal year ended June 30, 1911*—Continued.

| Locations. | Number of applications, entries, etc. (original and final). | Area (acres). | | | Receipts. | | | | | Expenses. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Entered. | | Patented. | Fees and commissions. | Sales of land. | | | Total. | Salaries and commissions of registers and receivers. | Incidental expenses. | Total. |
| | | Original. | Final. | | | Public. | Indian. | Reclamation water, right charges, reclamation town sites, etc. | | | | |
| Utah: | | | | | | | | | | | | |
| Salt Lake City | 2,040 | 468,823.67 | 14,780.05 | 15,523.047 | $27,292.66 | $88,948.65 | | | $116,241.31 | $6,000.00 | $4,213.42 | $10,213.42 |
| Vernal | 70 | 31,222.01 | 570.22 | 147,248.480 | 5,100.69 | 1,392.17 | $223,854.35 | | 230,347.21 | 6,000.00 | 1,302.00 | 7,302.00 |
| Railroad, Indian, and private land grants | | | | 4,034.39 | | | | | | | | |
| Washington: | | | | | | | | | | | | |
| North Yakima | 547 | 45,576.63 | 36,156.76 | 51,729.61 | 5,261.58 | 32,960.54 | | $103,047.28 | 141,269.40 | 6,000.00 | 3,041.10 | 9,041.10 |
| Olympia | 85 | 3,350.31 | 2,878.42 | 6,033.76 | 922.62 | 2,912.94 | | | 3,835.56 | 1,790.87 | 648.45 | 2,439.32 |
| Seattle | 339 | 16,017.95 | 6,770.22 | 18,921.257 | 3,376.29 | 23,090.80 | | | 26,467.09 | 3,991.08 | 2,966.70 | 6,957.78 |
| Spokane | 1,130 | 123,849.21 | 52,330.40 | 116,282.488 | 16,828.27 | 45,984.46 | 15,048.99 | | 77,861.72 | 6,000.00 | 2,434.10 | 8,434.10 |
| Vancouver | 523 | 30,067.55 | 18,064.88 | 39,430.62 | 5,422.67 | 27,184.52 | | | 32,607.19 | 5,391.50 | 2,167.50 | 7,559.00 |
| Walla Walla | 868 | 70,846.82 | 59,592.28 | 103,274.76 | 8,616.82 | 42,461.21 | | | 51,078.03 | 6,000.00 | 2,639.30 | 8,639.30 |
| Waterville | 1,995 | 152,624.38 | 126,153.80 | 164,034.068 | 17,244.05 | 66,179.94 | 8,073.88 | 27,842.50 | 119,340.37 | 6,000.00 | 2,689.78 | 8,689.78 |
| Railroad, Indian, and private land grants | | | | 6,944.41 | | | | | | | | |
| Wisconsin: | | | | | | | | | | | | |
| Wausau | 597 | 17,970.36 | 34,404.20 | 42,818.64 | 4,366.89 | 6,497.46 | | | 10,864.35 | 4,026.64 | 1,476.10 | 5,502.74 |
| Wyoming: | | | | | | | | | | | | |
| Buffalo | 1,353 | 152,158.04 | 31,535.95 | 67,427.99 | 7,504.81 | 89,179.26 | | | 96,684.07 | 6,000.00 | 3,117.00 | 9,117.00 |
| Cheyenne | 1,205 | 204,726.65 | 38,007.65 | 54,883.951 | 14,889.62 | 63,175.04 | | 571.40 | 78,636.06 | 6,000.00 | 3,052.83 | 9,052.83 |
| Douglas | 984 | 135,045.24 | 23,234.28 | 35,683.16 | 10,779.71 | 28,569.84 | | | 39,349.55 | 6,000.00 | 1,477.50 | 7,477.50 |
| Evanston | 455 | 59,467.24 | 17,158.99 | 29,939.99 | 4,676.28 | 48,587.79 | | | 53,264.07 | 4,379.02 | 965.00 | 5,344.02 |
| Lander | 959 | 397,477.61 | 16,188.01 | 44,625.937 | 9,983.18 | 19,986.33 | 20,240.01 | 38,550.99 | 88,760.51 | 6,000.00 | 1,608.25 | 7,608.25 |
| Sundance | 1,522 | 209,473.80 | 33,424.22 | 52,917.838 | 16,138.23 | 74,097.81 | | | 90,236.04 | 6,000.00 | 2,197.00 | 8,197.00 |
| Railroad, Indian, and private land grants | | | | 2,840.00 | | | | | | | | |
| Made at General Land Office | | | | 873.21 | 13.20 | 4,437.53 | | | 4,450.73 | | | |
| Total | 140,139 | 17,639,099.54 | 7,653,610.67 | 12,272,495.435 | 1,461,514.30 | 5,783,693.39 | 2,822,600.71 | 892,414.29 | 10,960,222.69 | 557,183.59 | 313,058.41 | 870,242.00 |

## RECAPITULATION BY STATES.

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alabama | 1,275 | 49,198.84 | 47,920.66 | 71,492.750 | $7,526.91 | $20,681.75 | $600.37 | | $28,809.03 | $5,272.48 | $1,275.35 | $6,547.83 |
| Alaska | 106 | 15,477.69 | 77.06 | 4,177.08 | 664.30 | 136,613.85 | | | 137,278.15 | 5,625.48 | 1,461.40 | 7,086.88 |
| Arizona | 2,624 | 486,066.86 | 62,414.25 | 215,153.676 | 22,723.33 | 128,988.30 | 9,415.25 | | 161,126.88 | 6,000.00 | 5,276.59 | 11,276.59 |
| Arkansas | 4,010 | 201,006.00 | 177,626.18 | 250,806.72 | 29,321.71 | 109,750.67 | | | 139,072.38 | 16,912.50 | 6,969.20 | 23,881.70 |
| California | 6,415 | 1,062,005.18 | 147,901.46 | 640,349.206 | 55,072.28 | 332,765.17 | 4,759.84 | $10,602.48 | 403,199.77 | 41,327.78 | 18,305.20 | 59,632.98 |
| Colorado | 14,385 | 2,129,591.31 | 407,809.21 | 329,545.782 | 188,914.17 | 450,934.84 | 96,017.84 | | 735,866.85 | 51,985.67 | 27,864.93 | 79,850.60 |
| Florida | 2,316 | 144,809.48 | 91,648.37 | 111,716.26 | 17,944.88 | 46,748.11 | | | 64,692.99 | 6,000.00 | 5,527.50 | 11,527.50 |
| Idaho | 7,414 | 1,099,796.01 | 307,382.06 | 428,751.462 | 82,583.47 | 273,472.28 | 111,173.11 | 180,470.71 | 647,699.57 | 29,956.18 | 19,111.25 | 49,067.43 |
| Illinois | | | | 2,967.28 | | | | | | | | |
| Indiana | | | | 1,263.67 | | | | | | | | |
| Iowa | | | | 604.04 | | | | | | | | |
| Kansas | 2,226 | 120,714.66 | 204,398.32 | 249,926.48 | 19,536.55 | 84,841.87 | 4,301.35 | | 108,679.77 | 11,872.68 | 4,443.83 | 16,316.51 |
| Louisiana | 780 | 24,432.63 | 29,815.84 | 45,994.12 | 5,702.14 | 12,896.63 | | | 18,598.77 | 5,631.75 | 2,224.72 | 7,856.47 |
| Michigan | 339 | 17,189.17 | 10,681.54 | 21,411.413 | 3,262.30 | 6,288.39 | | | 9,550.69 | 3,144.05 | 1,179.77 | 4,323.82 |
| Minnesota | 2,166 | 85,906.65 | 109,656.62 | 582,076.26 | 32,901.50 | 89,816.26 | 116,598.33 | | 239,316.09 | 18,000.00 | 9,993.35 | 27,993.35 |
| Mississippi | 747 | 34,440.75 | 25,901.37 | 52,865.03 | 5,794.02 | 6,536.30 | | | 12,330.32 | 4,134.64 | 2,251.25 | 6,385.89 |
| Missouri | 772 | 19,292.74 | 37,233.32 | 72,734.052 | 4,154.59 | 18,959.43 | | | 23,114.02 | 4,071.86 | 1,241.40 | 5,313.26 |
| Montana | 21,988 | 4,257,302.52 | 522,269.75 | 1,187,812.377 | 298,109.09 | 727,371.86 | 344,105.06 | 72,992.73 | 1,442,578.74 | 58,819.91 | 39,858.61 | 98,678.52 |
| Nebraska | 7,008 | 1,505,528.80 | 1,368,095.34 | 2,085,724.078 | 63,813.67 | 144,091.31 | 898.72 | 26,092.00 | 234,895.70 | 31,707.74 | 11,195.47 | 42,903.21 |
| Nevada | 1,110 | 312,510.88 | 8,156.70 | 109,598.130 | 11,180.04 | 77,288.08 | | 75,873.55 | 164,341.67 | 6,000.00 | 3,017.00 | 9,017.00 |
| New Mexico | 9,889 | 1,377,563.07 | 421,544.96 | 692,084.289 | 110,837.65 | 341,108.14 | | 70,949.35 | 522,890.14 | 34,500.00 | 28,649.64 | 63,149.64 |
| North Dakota | 10,430 | 511,988.47 | 1,044,942.02 | 1,097,569.52 | 85,522.83 | 682,923.39 | 16,268.11 | 5,552.18 | 790,266.51 | 32,320.88 | 21,093.57 | 53,414.45 |
| Ohio | | | | 160.00 | | | | | | | | |
| Oklahoma | 4,919 | 134,069.23 | 553,855.17 | 700,794.414 | 33,685.68 | 123,844.51 | 654,607.71 | | 812,137.90 | 17,406.81 | 14,961.97 | 32,368.78 |
| Oregon | 7,062 | 733,457.15 | 223,720.26 | 472,378.826 | 72,878.15 | 295,498.74 | 6,441.93 | 188,765.17 | 563,583.99 | 38,006.03 | 19,038.11 | 57,044.14 |
| South Dakota | 17,486 | 1,198,053.98 | 1,339,310.13 | 1,840,078.914 | 150,967.47 | 1,006,632.22 | 1,190,195.86 | 91,103.95 | 2,438,899.50 | 42,908.04 | 32,122.27 | 75,030.31 |
| Utah | 2,110 | 500,045.68 | 15,350.27 | 166,805.917 | 32,393.35 | 90,340.82 | 223,854.35 | | 346,588.52 | 12,000.00 | 5,515.42 | 17,515.42 |
| Washington | 5,487 | 442,332.85 | 301,946.76 | 506,650.973 | 57,672.30 | 240,774.41 | 23,122.87 | 130,889.78 | 452,459.36 | 35,173.45 | 16,586.93 | 51,760.38 |
| Wisconsin | 597 | 17,970.36 | 34,404.20 | 42,818.64 | 4,366.89 | 6,497.46 | | | 10,864.35 | 4,026.64 | 1,476.10 | 5,502.74 |
| Wyoming | 6,478 | 1,158,348.58 | 159,548.85 | 288,318.966 | 63,971.83 | 323,596.07 | 20,240.01 | 39,122.39 | 446,930.30 | 34,379.02 | 12,417.58 | 46,796.60 |
| Made at General Land Office | | | | 873.21 | 13.20 | 4,437.53 | | | 4,450.73 | | | |
| Total | 140,139 | 17,639,099.54 | 7,653,610.67 | 12,272,495.435 | 1,461,514.30 | 5,783,693.39 | 2,822,600.71 | 892,414.29 | 10,960,222.69 | 557,183.59 | 313,058.41 | 870,242.00 |
| Depredations | | | | | | | | | 62,423.96 | | | |
| Government property | | | | | | | | | 287.37 | | | |
| Copies of records, plats, etc. | | | | | | | | | 50,914.05 | | | |
| Sales of timber in Alaska | | | | | | | | | 16,079.53 | | | |
| Aggregate | 140,139 | 17,639,099.54 | 7,653,610.67 | 12,272,405.435 | 1,461,514.30 | 5,783,693.39 | 2,822,600.71 | 892,414.29 | 11,089,927.60 | 557,183.59 | 313,058.41 | 870,242.00 |

*Entries made and expenses incurred at district land offices during fiscal year ended June 30, 1911*—Continued.

RECAPITULATION BY CLASSES OF ENTRIES.

| States or Territories. | Sales of land— | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | At public auction. | | | Subject to preemption entry. | | | Timber and stone. | | | Mineral. | | |
| | Entries. | Acres. | Amount. | Entries. | Acres. | Amount. | Entries. | Acres. | Amount. | Entries. | Acres. | Amount. |
| Alabama | | | | | | | 47 | 3,500.27 | $10,359.61 | | | |
| Alaska | | | | | | | | | | 18 | 2,552.99 | $11,055.04 |
| Arizona | | | | | | | | | | 121 | 8,283.93 | 40,335.00 |
| Arkansas | 24 | 1,292.30 | $2,282.84 | | | | 31 | 2,592.70 | 8,359.93 | 1 | 37.32 | 190.00 |
| California | 101 | 7,011.06 | 17,494.79 | 3 | 7.80 | $209.75 | 152 | 18,028.25 | 58,739.56 | 137 | 19,510.71 | 57,331.54 |
| Colorado | 285 | 25,838.74 | 47,552.47 | | | | 34 | 3,423.22 | 10,937.88 | 208 | 4,399.72 | 20,610.00 |
| Florida | 6 | 319.73 | 499.51 | 1 | 160.02 | 200.02 | 46 | 5,156.76 | 20,127.00 | | | |
| Idaho | 92 | 4,672.38 | 9,294.14 | | | | 72 | 7,445.69 | 33,562.06 | 70 | 4,648.51 | 22,172.50 |
| Kansas | 97 | 7,834.95 | 14,259.09 | | | | | | | | | |
| Louisiana | 3 | 121.27 | 151.58 | | | | 8 | 548.56 | 1,375.06 | | | |
| Michigan | 3 | 320.00 | 390.00 | | | | 11 | 715.71 | 2,686.75 | | | |
| Minnesota | 37 | 1,405.05 | 3,025.50 | | | | 223 | 24,606.48 | 64,464.91 | | | |
| Mississippi | | | | | | | 5 | 450.55 | 1,148.82 | | | |
| Missouri | 189 | 4,680.03 | 18,956.41 | | | | | | | | | |
| Montana | 562 | 41,215.14 | 81,954.50 | 19 | 1,378.52 | 2,375.28 | 134 | 14,870.35 | 51,665.47 | 137 | 5,282.14 | 20,545.00 |
| Nebraska | 505 | 71,798.42 | 107,056.50 | | | | | | | | | |
| Nevada | 4 | 248.39 | 490.49 | | | | | | | 179 | 11,235.82 | 55,975.00 |
| New Mexico | 139 | 8,193.87 | 10,687.59 | | | | | | | 24 | 2,331.69 | 9,717.50 |
| North Dakota | 217 | 11,444.08 | 31,673.62 | | | | 1 | 120.00 | 300.00 | | | |
| Oklahoma | 28 | 1,264.65 | 1,674.10 | | | | | | | 1 | 150.00 | 375.00 |
| Oregon | 322 | 27,907.69 | 45,500.58 | | | | 324 | 37,164.80 | 124,939.06 | 19 | 1,027.63 | 4,525.00 |
| South Dakota | 1,067 | 67,846.51 | 170,839.62 | | | | 28 | 2,595.39 | 7,192.48 | 16 | 1,147.95 | 5,112.50 |
| Utah | 3 | 122.46 | 163.07 | | | | 3 | 360.06 | 500.15 | 77 | 3,123.09 | 15,397.50 |
| Washington | 204 | 13,646.87 | 26,370.86 | 1 | 160.00 | 200.00 | 131 | 11,656.21 | 46,324.42 | 35 | 3,076.97 | 11,114.94 |
| Wisconsin | 7 | 185.18 | 343.25 | | | | 10 | 805.31 | 2,317.55 | | | |
| Wyoming | 315 | 27,889.85 | 44,012.67 | | | | 83 | 9,416.14 | 31,744.36 | 13 | 2,335.86 | 6,140.00 |
| Total | 4,210 | 325,258.62 | 634,673.18 | 24 | 1,706.34 | 2,985.05 | 1,343 | 143,456.45 | 476,745.07 | 1,066 | 69,144.33 | 280,596.52 |

| States or Territories. | Coal-land applications to purchase, act Mar. 3, 1873, and subsequent acts, for the fiscal year ended June 30, 1911. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Final certificate issued. | | | Final certificate not issued. | | | Total. | | |
| | No. | Area. | Amount. | No. | Area. | Amount. | No. | Area. | Amount. |
| | | Acres. | | | Acres. | | | Acres. | |
| Alaska | | | | 18 | 12,551.33 | $125,513.42 | 18 | 12,551.33 | $125,513.42 |
| California | 1 | 307.10 | $3,071.00 | | | | 1 | 307.10 | 3,071.00 |
| Colorado | 12 | 1,103.09 | 56,579.05 | | | | 12 | 1,103.09 | 56,579.05 |
| Idaho | 3 | 323.18 | 3,231.80 | | | | 3 | 323.18 | 3,231.80 |
| Montana | 7 | 785.92 | 10,517.30 | 13 | 2,010.21 | 38,585.50 | 20 | 2,796.13 | 49,102.80 |
| New Mexico | | | | 1 | .11 | 2.20 | 1 | .11 | 2.20 |
| North Dakota | 5 | 314.72 | 3,147.20 | | | | 5 | 314.72 | 3,147.20 |
| South Dakota | 7 | 560.00 | 5,600.00 | 4 | 240.00 | 3,200.00 | 11 | 800.00 | 8,800.00 |
| Utah | 8 | 1,000.00 | 34,000.00 | 4 | 477.33 | 15,869.00 | 12 | 1,477.33 | 49,869.00 |
| Washington | 2 | 301.94 | 6,038.80 | | | | 2 | 301.94 | 6,038.80 |
| Wyoming | 11 | 1,391.86 | 60,622.60 | 12 | 1,635.16 | 18,047.03 | 23 | 3,027.02 | 78,669.63 |
| Total | 56 | 6,087.81 | 182,807.75 | 52 | 16,914.14 | 201,217.15 | 108 | 23,001.95 | 384,024.90 |

*Entries made and expenses incurred at district land offices during fiscal year ended June 30, 1911*—Continued.

RECAPITULATION BY CLASSES OF ENTRIES—Continued.

| States or Territories. | Sales of abandoned military reservations. | Excess payments on homesteads and other entries. | | | Desert-land entries. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Entries. | Acres. | Amount. | Entries. | | Area (acres). | | Amount. | |
| | | | | | Original. | Final. | Original. | Final. | Original. | Final. |
| Alabama | | 72 | 79.75 | $99.95 | | | | | | |
| Arizona | 6,909.00 | 50 | 239.17 | 301.36 | 603 | 41 | 135,015.95 | 8,316.17 | $33,582.21 | $8,325.96 |
| Arkansas | | 68 | 338.03 | 422.62 | | | | | | |
| California | | 206 | 1,020.32 | 1,625.41 | 1,992 | 241 | 416,539.63 | 41,351.83 | 104,136.17 | 41,353.55 |
| Colorado | | 775 | 2,696.79 | 6,417.97 | 1,781 | 433 | 313,337.98 | 77,884.91 | 78,375.26 | 77,884.91 |
| Florida | 509.68 | 240 | 357.60 | 448.19 | | | | | | |
| Idaho | | 199 | 1,031.69 | 1,357.02 | 1,108 | 279 | 145,449.40 | 42,022.34 | 36,336.97 | 42,023.98 |
| Kansas | | 30 | 47.67 | 75.23 | | | | | | |
| Louisiana | | 37 | 102.82 | 129.14 | | | | | | |
| Michigan | | 9 | 37.53 | 46.96 | | | | | | |
| Minnesota | | 33 | 206.63 | 292.01 | | | | | | |
| Mississippi | | 56 | 315.98 | 553.48 | | | | | | |
| Missouri | | 2 | 2.42 | 3.02 | | | | | | |
| Montana | 488.49 | 830 | 3,062.71 | 4,543.81 | 1,737 | 531 | 274,019.47 | 91,284.81 | 66,486.67 | 91,291.59 |
| Nebraska | 484.78 | 291 | 1,390.27 | 1,776.27 | | | | | | |
| Nevada | | 39 | 167.56 | 246.35 | 270 | 13 | 57,573.02 | 1,798.46 | 14,402.88 | 1,718.46 |
| New Mexico | 153.10 | 368 | 1,101.62 | 1,381.06 | 835 | 70 | 143,982.38 | 10,959.91 | 36,029.56 | 10,959.91 |
| North Dakota | | 135 | 697.04 | 1,232.75 | 2 | 1 | 192.92 | 183.60 | 48.23 | 183.60 |
| Oklahoma | | 9 | 13.85 | 19.50 | | | | | | |
| Oregon | | 282 | 1,290.56 | 1,723.93 | 507 | 99 | 84,545.10 | 14,980.03 | 21.072.62 | 13,983.38 |
| South Dakota | 919.90 | 292 | 1,280.74 | 1,473.01 | 551 | 61 | 70,418.69 | 9,552.79 | 17,683.74 | 9,712.63 |
| Utah | 173.51 | 120 | 207.88 | 277.57 | 368 | 80 | 54.473.69 | 9,091.49 | 13,611.42 | 9,091.57 |
| Washington | | 125 | 485.22 | 731.49 | 708 | 24 | 102,810.66 | 2,822.50 | 25,694.20 | 2,822.50 |
| Wisconsin | | 9 | 45.39 | 57.60 | | | | | | |
| Wyoming | 25,528.11 | 201 | 1,517.82 | 1,264.97 | 822 | 263 | 124,601.77 | 39,597.83 | 31,075.96 | 39,514.67 |
| Total | 35,166.57 | 4,478 | 17,737.06 | 26,500.67 | 11,284 | 2,136 | 1,922,960.66 | 349,846.67 | 478,535.89 | 348,866.71 |

| States or Territories. | Homestead entries. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Entries. | | | Area (acres). | | | Amount. | | |
| | Original. | Final. | Commuted. | Original. | Final. | Commuted. | Original. | Final. | Commuted. |
| Alabama | 558 | 440 | 91 | 45,658.34 | 39,641.84 | 7,834.48 | $4,810.84 | $992.43 | $9,752.17 |
| Alaska | 8 | 1 | 1 | 373.27 | 47.34 | 29.72 | 64.44 | 3.56 | 37.15 |
| Arizona | 1,146 | 195 | 206 | 337,290.47 | 23,121.89 | 30,976.29 | 24,194.73 | 892.41 | 38,834.37 |
| Arkansas | 2,125 | 1,438 | 134 | 196,805.74 | 165,276.52 | 12,360.66 | 19,684.55 | 4,126.16 | 15,449.86 |
| California | 2,041 | 512 | 222 | 549,429.39 | 72,143.82 | 32,118.85 | 34,162.69 | 3,029.82 | 78,579.97 |
| Colorado | 8,204 | 1,655 | 689 | 1,857,353.23 | 246,767.73 | 106,421.10 | 160,194.33 | 11,658.35 | 149,503.02 |
| Florida | 1,173 | 567 | 161 | 139,092.92 | 71,254.54 | 19,842.87 | 12,967.26 | 1,777.51 | 24,863.63 |
| Idaho | 4,268 | 1,293 | 627 | 1,027,956.25 | 176,911.82 | 88,287.90 | 65,293.54 | 7,560.50 | 108,511.74 |
| Kansas | 772 | 987 | 337 | 112,879.71 | 153,442.26 | 50,956.06 | 10,755.00 | 5,175.75 | 70,507.55 |
| Louisiana | 323 | 285 | 96 | 23,762.80 | 21,904.63 | 7,412.57 | 2,717.64 | 633.05 | 9,840.85 |
| Michigan | 173 | 78 | 26 | 16,153.46 | 8,149.80 | 2,531.74 | 1,647.63 | 203.77 | 3,164.68 |
| Minnesota | 1,857 | 1,125 | 147 | 213,818.96 | 144,375.06 | 16,199.25 | 20,660.56 | 4,063.33 | 21,833.84 |
| Mississippi | 433 | 255 | 50 | 33,990.20 | 22,074.73 | 3,667.22 | 3,644.00 | 558.86 | 4,634.73 |
| Missouri | 184 | 395 | .......... | 14,451.01 | 37,233.32 | .......... | 1,552.07 | 975.98 | .......... |
| Montana | 15,399 | 1,210 | 1,519 | 3,917,816.84 | 196,589.36 | 231,392.62 | 274,731.36 | 10,787.96 | 357,485.96 |
| Nebraska | 3,033 | 3,086 | 66 | 1,418,640.25 | 1,323,519.89 | 8,539.72 | 41,807.13 | 12,837.95 | 13,745.15 |
| Nevada | 408 | 22 | 20 | 243,453.65 | 3,297.22 | 3,061.02 | 9,422.15 | 165.46 | 4,454.90 |
| New Mexico | 5,580 | 1,510 | 1,403 | 1,213,240.93 | 248,204.90 | 217,322.05 | 96,131.28 | 9,363.26 | 271,763.07 |
| North Dakota | 3,431 | 4,186 | 2,567 | 501,203.76 | 647,439.68 | 400,205.99 | 48,059.70 | 25,010.79 | 645,287.97 |
| Oklahoma | 1,209 | 2,992 | 683 | 142,907.91 | 456,500.60 | 97,345.57 | 13,255.11 | 13,734.12 | 121,748.63 |
| Oregon | 3,581 | 951 | 448 | 581,838.95 | 143,300.34 | 61,138.36 | 54,570.23 | 5,886.48 | 82,513.17 |
| South Dakota | 8,466 | 1,232 | 7,352 | 1,296,756.62 | 190,910.93 | 1,125,322.68 | 114,533.37 | 9,914.11 | 784,674.44 |
| Utah | 1,452 | 41 | 8 | 466,385.76 | 5,590.38 | 938.49 | 28,965.21 | 1,091.59 | 1,149.78 |
| Washington | 2,138 | 1,581 | 508 | 333,394.04 | 243,646.27 | 65,644.91 | 32,978.83 | 14,046.80 | 121,126.42 |
| Wisconsin | 233 | 294 | 32 | 16,859.87 | 31,871.91 | 2,292.29 | 2,124.84 | 1,308.57 | 3,279.06 |
| Wyoming | 2,525 | 446 | 286 | 487,563.69 | 75,833.32 | 44,117.70 | 45,656.92 | 3,188.54 | 65,645.70 |
| Total | 70,720 | 26,777 | 17,679 | 15,189,087.02 | 4,749,050.10 | 2,635,969.11 | 1,124,575.41 | 148,987.11 | 3,008,387.81 |

*Entries made and expenses incurred at district land offices during fiscal year ended June 30, 1911*—Continued.

RECAPITULATION BY CLASSES OF ENTRIES—Continued.

| States or Territories. | Applications. |  |  |  |  |  | Mineral protests. |  | Filings. |  |  |  |  |  |  |  |  |  | Fees. |  | Miscellaneous entries, applications, sales, etc. |  |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | For timber and stone lands. |  | Coal lands |  | Mineral. |  |  |  | Preemption. |  | Homestead. |  | Coal land. |  | Reservoir. |  | Town site. |  | Cancellation. | Received for reducing testimony to writing, etc. |  |  |  |
|  | No. | Fees. | No. | Fees. | No. | Fees. | No. | Fees. | No. | Fees. | No. | Fees. | No. | Fees. | No. | Fees. | No. | Fees. |  |  | No. | Area (acres). | Amount. |
| Alabama | 59 | $590.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | $1,133.64 |  |  |  |
| Alaska |  |  | 33 | $330.00 | 23 | $230.00 | 2 | $20.00 |  |  |  |  | 1 | $3.00 |  |  |  |  |  | 12.40 |  |  | $16,079.58 |
| Arizona |  |  |  |  | 125 | 1,250.00 | 11 | 110.00 |  |  | 4 | $12.00 |  |  | 6 | $18.00 |  |  | $13.00 | 1,210.17 | 16 | 920.33 | 723.40 |
| Arkansas | 55 | 550.00 |  |  | 5 | 50.00 |  |  |  |  | 15 | 30.00 |  |  |  |  |  |  | 22.00 | 4,859.00 | 7 | 267.94 | [1]82,865.42 |
| California | 293 | 2,930.00 |  |  | 112 | 1,120.00 | 7 | 70.00 |  |  | 22 | 66.00 |  |  |  |  |  |  | 70.00 | 6,995.52 | 2 | 173.23 | 126.28 |
| Colorado | 92 | 920.00 |  |  | 211 | 2,110.00 | 16 | 160.00 | 296 | $888.00 | 300 | 900.00 | 124 | 372.00 | 34 | 102.00 |  |  | 204.00 | 10,570.72 | 2 | 232.03 | 490.07 |
| Florida | 110 | 1,100.00 |  |  |  |  |  |  |  |  | 4 | 8.00 |  |  |  |  |  |  | 10.00 | 2,092.11 | 1 | 80.06 | 100.08 |
| Idaho | 141 | 1,410.00 |  |  | 55 | 550.00 | 7 | 70.00 |  |  | 32 | 96.00 | 1 | 3.00 |  |  | 1 | $3.50 | 68.00 | 7,524.93 | 5 | 641.50 | 13,797.24 |
| Kansas |  |  |  |  |  |  |  |  |  |  | 10 | 20.00 |  |  | 2 | 4.00 |  |  | 17.00 | 3,564.80 |  |  |  |
| Louisiana | 15 | 150.00 |  |  | 46 | 460.00 |  |  |  |  | 1 | 2.00 |  |  |  |  |  |  |  | 1,739.45 | 4 | 318.66 | 400.00 |
| Michigan | 39 | 390.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1.00 | 1,019.90 |  |  |  |
| Minnesota | 286 | 2,860.00 |  |  |  |  |  |  |  |  | 2 | 4.00 |  |  |  |  |  |  | 33.00 | 4,282.59 | 1 | 160.00 | 200.00 |
| Mississippi | 3 | 30.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 4.00 | 1,557.16 | 1 | 150.42 | 199.27 |
| Missouri |  |  |  |  |  |  |  |  |  |  | 1 | 2.00 |  |  |  |  |  |  | 13.00 | 1,305.59 |  |  |  |
| Montana | 196 | 1,960.00 |  |  | 145 | 1,450.00 | 5 | 50.00 | 15 | 45.00 | 172 | 516.00 | 92 | 276.00 | 27 | 81.00 |  |  | 136.00 | 8,075.77 | 1 | 12.98 | 232.32 |
| Nebraska |  |  |  |  |  |  |  |  |  |  | 13 | 26.00 |  |  | 2 | 4.00 |  |  | 100.00 | 9,038.59 |  |  |  |
| Nevada |  |  |  |  | 128 | 1,280.00 | 7 | 70.00 |  |  |  |  | 20 | 60.00 |  |  |  |  | 1.00 | 181.43 |  |  |  |
| New Mexico |  |  |  |  | 27 | 270.00 | 4 | 40.00 |  |  | 21 | 63.00 | 16 | 48.00 | 3 | 9.00 |  |  | 157.00 | 6,746.11 | 3 | 327.29 | 409.15 |
| North Dakota | 5 | 50.00 |  |  |  |  |  |  |  |  | 11 | 22.00 | 27 | 54.00 | 6 | 12.00 |  |  | 298.00 | 12,016.28 | 1 | 80.00 | 100.00 |
| Oklahoma | 1 | 10.00 |  |  | 1 | 10.00 |  |  |  |  | 1 | 2.00 |  |  |  |  |  |  | 31.00 | 6,654.83 |  |  |  |
| Oregon | 672 | 6,720.00 |  |  | 19 | 190.00 |  |  |  |  | 12 | 36.00 | 8 | 24.00 | 1 | 3.00 |  |  | 42.00 | 5,095.38 | 7 | 1,017.79 | 1,261.00 |
| South Dakota | 100 | 1,000.00 |  |  | 21 | 210.00 |  |  |  |  | 977 | 1,954.00 | 44 | 88.00 | 12 | 24.00 |  |  | 68.00 | 23,155.99 | 3 | 129.70 | 224.25 |
| Utah | 2 | 20.00 |  |  |  |  |  |  |  |  | 3 | 9.00 | 30 | 90.00 |  |  |  |  | 9.00 | 1,222.55 | 1 | 142.95 | 107.25 |
| Washington | 310 | 3,100.00 |  |  | 47 | 470.00 | 4 | 40.00 |  |  | 4 | 12.00 | 39 | 117.00 |  |  |  |  | 21.00 | 6,886.40 | 3 | 88.70 | 350.00 |
| Wisconsin | 8 | 80.00 |  |  |  |  |  |  |  |  | 1 | 2.00 |  |  |  |  |  |  |  | 851.48 | 3 | 360.00 | 500.00 |
| Wyoming | 172 | 1,720.00 |  |  | 14 | 140.00 | 2 | 20.00 |  |  | 10 | 30.00 | 101 | 303.00 | 9 | 27.00 |  |  | 15.00 | 3,354.33 |  |  |  |
| Ttoal | 2,559 | 25,590.00 | 33 | 330.00 | 979 | 9,790.00 | 65 | 650.00 | 311 | 933.00 | 1,616 | 3,812.00 | 503 | 1,438.00 | 102 | 284.00 | 1 | 3.50 | 1,333.00 | 131,088.71 | 61 | 5,112,52 | 118,165.26 |

[1] There is included the sum of $82,518 for sale of lots in Hot Springs Reservation.

*Sales of Indian lands during fiscal year ended June 30, 1911.*

| | Original entries. | | Receipts—sales and interest. |
|---|---|---|---|
| | Number. | Area. | |
| Alabama: | | | |
| Montgomery—Cherokee Indian school lands | 6 | 320.04 | $600.37 |
| Arizona: | | | |
| Phoenix—Colorado Indian Reservation | 157 | | 9,415.25 |
| California: | | | |
| Eureka—Round Valley Indian | 1 | 160.00 | 205.97 |
| Los Angeles—Yuma | | | 3,153.86 |
| Oakland—Round Valley | 27 | 2,159.71 | 1,225.61 |
| San Francisco—Round Valley | 2 | 320.00 | 174.40 |
| Colorado: | | | |
| Durango— | | | |
| Southern Ute (act Feb. 20, 1895) | 272 | 18,609.96 | 10,860.47 |
| Ceded Ute (acts June 15, 1880, and July 28, 1882) | 43 | 3,214.61 | 722.96 |
| Glenwood Springs—Ute (acts June 15, 1880, and July 28, 1882) | 559 | 42,190.75 | 23,992.52 |
| Montrose—Ute (acts June 15, 1880, and July 28, 1882) | 875 | 78,462.36 | 60,441.89 |
| Idaho: | | | |
| Blackfoot, Fort Hall, Pocatillo town lots | | | 1,370.00 |
| Coeur d'Alene—Coeur d'Alene (act June 21, 1906) | 700 | 91,216.90 | 109,803.11 |
| Kansas: | | | |
| Dodge City—Osage trust and diminished reserve | 38 | 2,095.53 | 4,281.13 |
| Topeka—Kansas trust and diminished reserve | | | 20.22 |
| Minnesota: | | | |
| Cass Lake—Chippewa | 626 | 34,928.35 | 29,733.89 |
| Crookston— | | | |
| Chippewa | 1,044 | 99,920.53 | 31,356.51 |
| Red Lake | 339 | 14,646.21 | 49,382.65 |
| Duluth—Chippewa | 91 | 4,428.85 | 6,125.28 |
| Montana: | | | |
| Billings—Crow Indian | 1,626 | 275,047.16 | 215,113.33 |
| Glasgow—Fort Peck town lots | | | 25,857.25 |
| Kalispell—Flathead | 594 | 70,513.96 | 49,095.70 |
| Missoula— | | | |
| Flathead | 506 | 56,218.74 | 53,176.28 |
| Bitter Root | 2 | 150.10 | 862.50 |
| Nebraska: | | | |
| Lincoln—Pawnee Indian | 3 | 23.02 | 77.72 |
| O'Neill—Omaha | 1 | 32.84 | 821.00 |
| North Dakota: | | | |
| Devils Lake—Sioux Indian | 20 | 1,369.01 | 16,268.11 |
| Oklahoma: | | | |
| El Reno— | | | |
| Wichita Indian | | | 5,851.03 |
| Comanche and Apache | 125 | 10,253.23 | 54,965.95 |
| Guthrie— | | | |
| Wichita | 15 | 2,238.04 | 2,997.57 |
| Comanche and Apache | 1 | 40.00 | 500.25 |
| Kiowa, Comanche, and Apache | | | 1,386.39 |
| Lawton—Kiowa, Comanche, and Apache | | | 588,906.52 |
| Oregon: | | | |
| La Grande—Umatilla Indian | 96 | 8,592.72 | 6,441.93 |
| South Dakota: | | | |
| Aberdeen— | | | |
| Cheyenne River Indian | 1,984 | 220,566.76 | 179,550.78 |
| Standing Rock | 238 | 37,191.98 | 29,593.19 |
| Gregory—Rosebud | 342 | 43,448.95 | 851,833.00 |
| Lemmon— | | | |
| Standing Rock | 936 | 146,836.37 | 86,678.46 |
| Cheyenne River | | | 7.63 |
| Pierre—Lower Brule | 125 | 14,175.83 | 8,867.73 |
| Timber Lake— | | | |
| Cheyenne River | 289 | 44,419.60 | 28,427.61 |
| Standing Rock | 44 | 6,935.96 | 5,237.46 |
| Utah: | | | |
| Vernal—Uintah Indian | 1,232 | 193,724.40 | 223,854.35 |
| Washington: | | | |
| Spokane— | | | |
| Colville Indians | 209 | 23,382.81 | 12,165.04 |
| Spokane Indians | 14 | 1,412.95 | 2,883.95 |
| Waterville—Colville Indians | 257 | 14,330.58 | 8,073.88 |
| Wyoming: | | | |
| Lander—Shoshone or Wind River Indian | 62 | 8,693.92 | 20,240.01 |
| Total | 13,501 | 1,572,272.73 | 2,822,600.71 |

# REPORT OF THE COMMISSIONER OF PENSIONS.

## COMMISSIONERS OF PENSIONS SINCE 1833.

| Name. | By whom appointed. | Whence appointed. | Date of commission. |
|---|---|---|---|
| Edwards, James L. | Jackson | Virginia | Mar. 3, 1833 |
| Heath, James E. | Fillmore | do | Nov. 27, 1850 |
| Waldo, Loren P. | Pierce | Connecticut | Mar. 17, 1853 |
| Minot, Josiah | do | New Hampshire | Aug. 1, 1855 |
| Whiting, George C. | do | Virginia | Jan. 19, 1857 |
| Barrett, Joseph H. | Lincoln | Ohio | Apr. 15, 1861 |
| Cox, Christopher C. | Johnson | Maryland | July 28, 1868 |
| Van Aernam, Henry | Grant | New York | May 1, 1869 |
| Baker, James H. | do | Minnesota | Apr. 20, 1871 |
| Atkinson, Henry M. | do | Nebraska | Mar. 26, 1875 |
| Gill, Charles R. | do | Wisconsin | Feb. 10, 1876 |
| Bentley, John A. | do | do | Mar. 28, 1876 |
| Dudley, William W. | Garfield | Indiana | June 27, 1881 |
| Clarke, Otis P. G. | Arthur | Rhode Island | Nov. 15, 1884 |
| Black, John C. | Cleveland | Illinois | Mar. 19, 1885 |
| Tanner, James | Harrison | New York | Mar. 27, 1889 |
| Raum, Green B. | do | Illinois | Oct. 19, 1889 |
| Lochren, William | Cleveland | Minnesota | Apr. 13, 1893 |
| Murphy, Dominic I. | do | Pennsylvania | May 28, 1896 |
| Evans, Henry Clay | McKinley | Tennessee | Apr. 1, 1897 |
| Ware, Eugene F. | Roosevelt | Kansas | May 10, 1902 |
| Warner, Vespasian | do | Illinois | Mar. 4, 1905 |
| Davenport, James L. | Taft | New Hampshire | Nov. 26, 1909 |

# REPORT OF THE COMMISSIONER OF PENSIONS.

DEPARTMENT OF THE INTERIOR,
BUREAU OF PENSIONS,
*Washington, D. C., September 15, 1911.*

SIR: I have the honor to submit the following report, showing the operations of the Bureau of Pensions for the fiscal year ended June 30, 1911:

## GENERAL STATEMENT.

In Exhibit 1 will be found the gains and losses to the roll and also the amounts disbursed to each class of pensioners during the year.

*Gains and losses in pension roll during the fiscal year 1911.*

| | | |
|---|---|---|
| Losses to the roll: | | |
| By death | 52,933 | |
| By remarriage | 867 | |
| By minors attaining the age of 16 years | 870 | |
| By failure to claim pension for 3 years | 287 | |
| From all other causes | 228 | |
| Total | | 55,185 |
| Gains to the roll: | | |
| By original allowances | 25,490 | |
| By restoration and renewal allowances | 710 | |
| Total | | 26,200 |
| Net loss to the roll | | 28,985 |

The number of survivors of the Civil War on the pension roll at the close of the fiscal year was 529,884. The number of survivors whose names were dropped from the roll during the year on account of death was 35,243. There were more than 2,000 certificates issued during the year to survivors of the Civil War who had never been pensioned before. The net reduction during the year in the number of survivors on the roll was only 32,731.

The number of individuals in the military and naval service of the United States during the Civil War is estimated at 2,213,365. It is believed that only about 25 per cent of those who rendered service in the Civil War are now living. The death rate of the survivors is now slightly in excess of 6 per cent per annum. The average age of the survivors is now about 70 years.

**In the following summary is shown the number of pensioners on the roll at the close of the fiscal years 1911 and 1910, together with the net gain or loss in each class during the year:**

*Pensioners on the roll June 30, 1911, and June 30, 1910.*

| | 1911 | 1910 | Gain. | Loss. |
|---|---|---|---|---|
| Revolutionary War: | | | | |
| Daughter | | 1 | | 1 |
| War of 1812: | | | | |
| Widows | 279 | 338 | | 59 |
| Indian wars: | | | | |
| Survivors | 1,387 | 1,560 | | 173 |
| Widows | 2,629 | 2,822 | | 193 |
| War with Mexico: | | | | |
| Survivors | 1,639 | 2,042 | | 403 |
| Widows | 5,982 | 6,359 | | 377 |
| Civil War: | | | | |
| Act Feb. 6, 1907— | | | | |
| Survivors | 356,830 | 362,433 | | 5,603 |
| General law— | | | | |
| Invalids | 113,063 | 121,581 | | 8,518 |
| Widows | 67,509 | 70,587 | | 3,078 |
| Minor children | 385 | 445 | | 60 |
| Mothers | 1,877 | 2,391 | | 514 |
| Fathers | 278 | 368 | | 90 |
| Brothers, sisters, sons, and daughters | 353 | 300 | 53 | |
| Helpless children | 508 | 533 | | 25 |
| Act June 27, 1890— | | | | |
| Invalids | 59,991 | 78,601 | | 18,610 |
| Minor children | 3,983 | 4,009 | | 26 |
| Helpless children | 375 | 335 | 40 | |
| Act Apr. 19, 1908— | | | | |
| Widows | 228,198 | 220,826 | 7,372 | |
| Army nurses | 406 | 442 | | 36 |
| War with Spain: | | | | |
| Invalids | 23,383 | 22,783 | 600 | |
| Widows | 1,217 | 1,183 | 34 | |
| Minor children | 326 | 330 | | 4 |
| Mothers | 3,032 | 3,072 | | 40 |
| Fathers | 522 | 512 | 10 | |
| Brothers, sisters, sons, and daughters | 9 | 7 | 2 | |
| Helpless children | 1 | 2 | | 1 |
| Regular establishment: | | | | |
| Invalids | 13,757 | 13,180 | 577 | |
| Widows | 2,799 | 2,727 | 72 | |
| Minor children | 149 | 136 | 13 | |
| Mothers | 1,066 | 1,011 | 55 | |
| Fathers | 152 | 152 | | |
| Brothers, sisters, sons, and daughters | 8 | 7 | 1 | |
| Helpless children | 5 | 8 | | 3 |
| Total | 892,098 | 921,083 | 8,829 | 37,814 |
| Net loss | | | | 28,985 |

The number of soldiers and sailors on the pension roll at the close of the year was 570,050, the number of dependents and widows was 321,642, and the number of Army nurses was 406.

In Exhibit 2 will be found the number and amount of first payments in each class of new certificates issued during the year. The total amount of first payments made during the year was $4,842,925.60 on 93,632 issues. The number of pension certificates issued during the year upon which the first payment had not yet been made at the close of the year was 4,578, upon which the amount accrued was $245,566 83.

The amount paid as attorneys' fees upon new issues was $163,610.06.

The following table shows the first payments made on new certificates each year during the last five years:

*First payments made during the last five fiscal years.*

| Fiscal year. | Number. | Amount. | Average. | Fiscal year. | Number. | Amount. | Average. |
|---|---|---|---|---|---|---|---|
| 1911 | 93,632 | $4,842,925 | $51.72 | 1908 | 316,500 | $13,394,633 | $42.32 |
| 1910 | 91,448 | 4,858,504 | 52.13 | 1907 | 186,973 | 6,643,768 | 55.02 |
| 1909 | 124,634 | 6,489,416 | 52.07 | | | | |

*Average first payments in each class.*

| Average value of first payments: | |
|---|---|
| In original cases | $88.43 |
| In original regular establishment cases | 110.88 |
| In original act Feb. 6, 1907, cases | 69.73 |
| In original general law, Civil-War cases | 162.18 |
| In original act June 27, 1890, cases | 272.81 |
| In original act Apr. 19, 1908, cases | 60.72 |
| In original War with Spain cases | 267.72 |
| In increase and reissue cases | 34.49 |
| In original War with Mexico cases | 168.28 |
| In original Indian war cases | 273.22 |

In Exhibit 3 is shown the appropriations and disbursements for the fiscal year 1911 and the unexpended balances at the close of the year, a summary of which is as follows:

*Appropriations and disbursements for fiscal year ended June 30, 1911.*

| | |
|---|---|
| Appropriation for pensions | $157,500,000.00 |
| Repayments to the appropriation | 7,359.74 |
| Total amount available for pensions | 157,507,359.74 |
| Amount disbursed | 157,325,160.35 |
| Unexpended balance | 182,199.39 |
| Appropriation for medical examinations | 250,000.00 |
| Repayments to the appropriation | 3.00 |
| Total amount available | 250,003.00 |
| Amount expended and authorized | 206,768.33 |
| Unexpended balance | 43,234.67 |
| Appropriation for salaries and clerk hire, pension agencies | 472,000.00 |
| Amount disbursed | 456,507.15 |
| Unexpended balance | 15,492.85 |
| Appropriation for rent and contingent expenses of agencies | 34,500.00 |
| Amount expended and outstanding obligations | 24,472.02 |
| Unexpended balance | 10,027.98 |

| | |
|---|---|
| Appropriation for inspection of agencies | $1,500.00 |
| Amount expended | 168.95 |
| Unexpended balance | 1,331.05 |
| Appropriation for salaries, Bureau of Pensions | 1,526,120.00 |
| Amount expended | 1,509,689.96 |
| Unexpended balance | 16,430.04 |
| Appropriation for salaries, per diem and expenses, special examiners | 306,000.00 |
| Amount expended | 283,219.34 |
| Unexpended balance | 22,780.66 |

*Summary of unexpended balances, exclusive of pensions, covered into the Treasury at the close of the fiscal year 1911.*

| | |
|---|---|
| Salaries in bureau | $16,430.04 |
| Salaries, per diem and expenses, special examiners | 22,780.66 |
| Fees, examining surgeons | 43,234.67 |
| Salaries and clerk hire, pension agencies | 15,492.85 |
| Contingent expenses of agencies | 10,027.98 |
| Inspection of agencies | 1,331.05 |
| Total | 109,297.25 |

In Exhibit 4 is shown the amount disbursed for pensions, salaries, clerk hire, and contingent expenses at each of the pension agencies. It also shows the amount disbursed by the pension agency, New York, N. Y., for rent, and that disbursed by the pension agency in Washington, D. C., for fees of examining surgeons. It will be observed that the amount expended at the smaller agencies for clerk hire is much larger in proportion to the number of pensioners paid than at the larger agencies. It is not possible to conduct a small agency with the same degree of economy as it is a large agency. This same fact has been fully demonstrated in the conduct of large business enterprises.

In the agency at Concord, N. H., the amount required for clerk hire per annum is about 52 cents per pensioner, while at the Topeka (Kans.) agency the amount is only about 37 cents per pensioner. The two agencies are cited not as any criticism on the conduct of the smaller agency. If the agency at Concord, N. H., paid as large a number of pensioners as the one at Topeka, Kans., the cost per pensioner at the Concord agency would undoubtedly be no greater than at the Topeka agency. The average salary paid the clerks at the Concord agency is about $900 per annum, while at the Topeka agency the average salary paid the clerks is about $1,200 per annum.

In the large agencies much saving has been effected by the introduction of labor-saving devices, which are not practicable in the smaller agencies. In a number of the larger agencies addressing machines have been installed for addressing envelopes and preparing vouchers. One clerk, by the use of an addressing machine, can address more envelopes in one day than could be addressed by 10 clerks by hand.

If it were possible to transact the business of all the agencies with the same degree of economy as that which obtains at the largest agencies, the saving in clerk hire would amount to $50,000 per annum.

The amount paid out for contingent expenses in this city largely exceeds that of any other agency. This agency is required to pay postage on mail addressed to pensioners residing in foreign countries, which is charged to contingent expenses. This expense alone is about $400 per annum and does not obtain at any other agency. The largest item of the contingent expenses of this agency during the last fiscal year was due to a fire in the rooms occupied by the agency in the Pension Building, which occurred January 13, 1911. This fire destroyed the addressing machine, the filing cabinets, the desks, chairs, and other furniture in two of the rooms. It was necessary to replace the articles destroyed by the fire, and the expenditure therefor came out of the contingent fund or appropriation for stationery and other necessary expenses of the pension agencies.

The amount disbursed for fees of examining surgeons during the year was $158,414.20. The fees for the medical examinations held during the last quarter of the fiscal year could not be paid until after the close of the year and therefore do not appear in the table of disbursements. It is estimated that the total cost of medical examinations held during the fiscal year will amount to $206,768.33 after all the accounts shall have been paid.

The amount expended for Navy pensions was $5,392,485.31. This is an increase of $57,028.04 over the previous year.

The law provides that Navy pensions shall be paid from the income of the Navy pension fund, so far as the same shall be sufficient for that purpose. The income from this fund during the fiscal year 1911 was $387,159.22, a small fraction of the amount required for the payment of Navy pensions.

*Interest on Navy pension fund and the amount paid for navy pensions each year for the past five years.*

| Fiscal year. | Interest. | Navy pensions. | Fiscal year. | Interest. | Navy pensions. |
|---|---|---|---|---|---|
| 1911 | $378,159 | $5,392,485 | 1908 | $360,409 | $4,934,350 |
| 1910 | 362,299 | 5,335,457 | 1907 | 361,405 | 4,248,712 |
| 1909 | 371,345 | 5,337,014 | | | |

The amount disbursed for pensions from July 1, 1790, to June 30, 1865, was $96,445,444.23. The amounts disbursed each year since that date, the cost of administration, including the entire expenses of the bureau in the settlement of claims, the cost of the pension-agency service, and fees of examining surgeons, and the number of pensioners on the roll at the close of each fiscal year are shown in the following table:

*Disbursements for pensions and for maintenance of pension system, 1866 to 1911.*

| Fiscal year. | Paid as pensions. | Cost, maintenance, and expenses. | Total. | Number of pensioners. |
|---|---|---|---|---|
| 1866 | $15,450,549.88 | $407,165.00 | $15,857,714.88 | 126,722 |
| 1867 | 20,784,789.69 | 490,977.35 | 21,275,767.04 | 155,474 |
| 1868 | 23,101,509.36 | 553,020.34 | 23,654,529.70 | 169,643 |
| 1869 | 28,513,247.27 | 564,526.81 | 29,077,774.08 | 187,963 |
| 1870 | 29,351,488.78 | 600,997.86 | 29,952,486.64 | 198,686 |
| 1871 | 28,518,792.62 | 863,079.00 | 29,381,871.62 | 207,495 |
| 1872 | 29,752,746.81 | 951,253.00 | 30,703,999.81 | 232,229 |
| 1873 | 26,982,063.89 | 1,003,200.64 | 27,985,264.53 | 238,411 |
| 1874 | 30,206,778.99 | 966,794.13 | 31,173,573.12 | 236,241 |
| 1875 | 29,270,404.76 | 982,695.35 | 30,253,100.11 | 234,821 |
| 1876 | 27,936,209.53 | 1,015,078.81 | 28,951,288.34 | 232,137 |
| 1877 | 28,182,821.72 | 1,034,459.33 | 29,217,281.05 | 232,104 |
| 1878 | 26,786,009.44 | 1,032,500.09 | 27,818,509.53 | 223,998 |
| 1879 | 33,664,428.92 | 837,734.14 | 34,502,163.06 | 242,755 |
| 1880 | 56,689,229.08 | 935,027.28 | 57,624,256.36 | 250,802 |
| 1881 | 50,583,405.35 | 1,072,059.64 | 51,655,464.99 | 268,830 |
| 1882 | 54,313,172.05 | 1,466,236.01 | 55,779,408.06 | 285,697 |
| 1883 | 60,427,573.81 | 2,591,648.29 | 63,019,222.10 | 303,658 |
| 1884 | 57,912,387.47 | 2,835,181.00 | 60,747,568.47 | 322,756 |
| 1885 | 65,171,937.12 | 3,392,576.34 | 68,564,513.46 | 345,125 |
| 1886 | 64,091,142.90 | 3,245,016.61 | 67,336,159.51 | 365,783 |
| 1887 | 73,752,997.08 | 3,753,400.91 | 77,506,397.99 | 406,007 |
| 1888 | 78,950,501.67 | 3,515,057.27 | 82,465,558.94 | 452,557 |
| 1889 | 88,842,720.58 | 3,466,968.40 | 92,309,688.98 | 489,725 |
| 1890 | 106,093,850.39 | 3,526,382.13 | 109,620,232.52 | 537,944 |
| 1891 | 117,312,690.50 | 4,700,636.44 | 122,013,326.94 | 676,160 |
| 1892 | 139,394,147.11 | 4,898,665.80 | 144,292,812.91 | 876,068 |
| 1893 | 156,906,637.94 | 4,867,734.42 | 161,774,372.36 | 966,012 |
| 1894 | 139,986,726.17 | 3,963,976.31 | 143,950,702.48 | 969,544 |
| 1895 | 139,812,294.30 | 4,338,020.21 | 144,150,314.51 | 970,524 |
| 1896 | 138,220,704.46 | 3,991,375.61 | 142,212,080.07 | 970,678 |
| 1897 | 139,949,717.35 | 3,987,783.07 | 143,937,500.42 | 976,014 |
| 1898 | 144,651,879.80 | 4,114,091.46 | 148,765,971.26 | 993,714 |
| 1899 | 138,355,052.95 | 4,147,517.73 | 142,502,570.68 | 991,519 |
| 1900 | 138,462,130.65 | 3,841,706.74 | 142,303,887.39 | 993,529 |
| 1901 | 138,531,483.84 | 3,868,795.44 | 142,400,279.28 | 997,735 |
| 1902 | 137,504,267.99 | 3,831,378.96 | 141,335,646.95 | 999,446 |
| 1903 | 137,759,653.71 | 3,993,216.79 | 141,752,870.50 | 996,545 |
| 1904 | 141,093,571,49 | 3,849,366.25 | 144,942,937.74 | 994,762 |
| 1905 | 141,142,861.33 | 3,721,832.82 | 144,864,694.15 | 998,441 |
| 1906 | 139,000,288.25 | 3,523,269.51 | 142,523,557.76 | 985,971 |
| 1907 | 138,155,412.46 | 3,309,110.44 | 141,464,522.90 | 967,371 |
| 1908 | 153,093,086.27 | 2,800,963.36 | 155,894,049.63 | 951,687 |
| 1909 | 161,973,703.77 | 2,852,583.73 | 164,826,287.50 | 946,194 |
| 1910 | 159,974,056.08 | 2,657,673.86 | 162,631,729.94 | 921,083 |
| 1911 | 157,325,160.35 | 2,517,127.06 | 159,842,287.41 | 892,098 |
| Total | 4,133,936,285.93 | 120,879,861.74 | 4,254,816,147.67 | |

It will be observed that the cost of administration in connection with the settlement of pension claims and the payment of pensions was $140,546.80 less during the last fiscal year than in the previous year. The cost was less in 1911 than in any year since 1882.

I wish especially to call attention to the appropriation for the maintenance of the pension system for the fiscal year ending June 30, 1912, as compared with that for 1909. The appropriation for 1909 provided for salaries in the Pension Bureau, $1,650,270; for salaries, per diem and expenses of special examiners, $380,000; for fees of examining surgeons, $500,000; and for salaries, clerk hire, and other expenses of pension agencies $553,000, making a total of $3,083,270. The appropriation for 1912 provides for salaries in the Pension Bureau, $1,483,620; for salaries, per diem and expenses of special examiners, $273,500; for fees of examining surgeons, $200,000; for salaries, clerk hire, and other expenses of pension agencies, $486,500; and for a card index of the records of the bureau $10,000, making a total of $2,453,620, and a net reduction in expense of $629,650.

The number of pensioners on the roll is less than at any time since 1892. There has been a net decrease of more than 100,000 in the number in the last six years.

## PENSIONS OF THE SEVERAL WARS AND OF THE PEACE ESTABLISHMENT.

The amounts that have been paid for pensions to soldiers, sailors, and marines, their widows, minor children, and dependent relatives on account of military and naval service in the several wars and in the regular service since the foundation of the Government to June 30, 1911, are as follows:

| | |
|---|---|
| War of the Revolution (estimate) | $70,000,000.00 |
| War of 1812 (service pension) | 45,853,024.19 |
| Indian wars (service pension) | 11,192,205.52 |
| War with Mexico (service pension) | 45,279,686.83 |
| Civil War | 3,985,719,836.93 |
| War with Spain and insurrection in Philippine Islands | 34,142,976.37 |
| Regular establishment | 21,705,852.33 |
| Unclassified | 16,488,147.99 |
| Total disbursements for pensions | 4,230,381,730.16 |

In Exhibit 5 is shown the number of pensioners by classes on the rolls of each of the agencies June 30, 1911, and the total number of pensioners on the rolls of each agency June 30, 1910. It will be observed that there was a decrease in the number at each of the agencies, the greatest being 3,147 at the Topeka agency. The smallest decrease was 271 at the San Francisco agency.

In Exhibit 6 is shown the number of pensioners in each State and Territory of the United States, each insular possession, and each foreign country at the close of the fiscal year, and the amounts paid to pensioners during the year in each of the localities mentioned.

In Exhibit 7 is shown the number of pensioners of the various classes at each rate on the roll at the close of the year, except those pensioned by special acts of Congress, which are shown in Exhibit 8.

In Exhibit 9 is shown the total number of pensioners on the roll by classes under the provisions of the general pension laws and also those pensioned by special acts of Congress. The annual value of each class is also shown.

The total annual value of the pensions under the provisions of the general pension laws at the close of the year was $148,222,880.80, the total number of pensioners being 869,775.

The number of pensioners on the roll under special acts of Congress at the close of the year was 22,323, and the annual value of such pensions was $6,611,357.

The increase in the number of "special-act" pensioners during the year was 2,901, and the increase in the annual value of such pensions was $886,111.

The annual value of the pension roll is the amount which would be required to pay all the pensioners on the roll at the close of year for one year at the rates then existing, should no new names be added to the roll and none be dropped therefrom.

There was a decrease in the annual value of the pension roll of $3,498,154.02 during the last fiscal year.

The average annual value of each pension at the close of the year was $173.56, an increase of $1.66 per pensioner during the year.

*Average value of each pension for the last five years.*

| | 1911 | 1910 | 1909 | 1908 | 1907 |
|---|---|---|---|---|---|
| Average annual value of each pension | $173.56 | $171.90 | $169.82 | $167.59 | $145.60 |
| Regular establishment | 173.63 | 173.26 | 181.77 | 173.76 | 173.12 |
| General law, Civil War | 228.58 | 224.44 | 219.96 | 215.30 | 204.20 |
| Act of June 27, 1890 | 143.26 | 139.95 | 135.55 | 130.75 | 112.82 |
| War with Spain | 128.47 | 127.52 | 126.83 | 126.87 | 127.19 |
| Act of Feb. 6, 1907 | 173.47 | 170.91 | 169.40 | 167.70 | 170.09 |
| Act of Apr. 19, 1908 | 144.99 | 145.16 | 145.42 | 145.10 | ........ |

Exhibit 10 is a statement of pension certificates issued during the year. The following summary shows the number of issues by classes:

*Pension certificates issued during the fiscal year.*

| | |
|---|---|
| Originals | 25,519 |
| Increases | 42,767 |
| Additionals | 17 |
| Reissues | 22,155 |
| Restorations | 215 |
| Renewals | 1,490 |
| Supplementals | 173 |
| Total | 92,336 |

The classes of certificates may be defined as follows:

*Originals.*—Cases in which no pension has before been granted.

*Increases.*—Cases in which increased rates are granted.

*Additionals.*—Issues under act of June 27, 1890, in lieu of pension under the general law.

*Reissues.*—Issues to allow for additional disabilities under the general law, to correct errors in former issues, and to allow pension under the general law and under the act of February 6, 1907, in lieu of pension under the act of June 27, 1890.

*Restorations.*—Issues to restore to the roll from date of last payment.

*Renewals.*—Issues to renew pension from a date when new title is shown.

*Supplementals.*—Cases in which title exists under different laws and issue is made under one law for a period not covered by the other issue.

The total number of pension certificates issued in the last 10 years is as follows:

*Pension certificates issued during last 10 years.*

| | | | |
|---|---|---|---|
| 1902 | 119,824 | 1907 | 236,516 |
| 1903 | 132,821 | 1908 | 328,676 |
| 1904 | 153,938 | 1909 | 123,742 |
| 1905 | 185,242 | 1910 | 97,242 |
| 1906 | 136,905 | 1911 | 92,336 |

It will be noticed that the number of certificates issued was the least issued in any one of the last 10 years. The largest number was issued in 1908. During that year the most of the claims filed under the act of February 6, 1907, immediately after its passage, were adjudicated and since then there has been an annual falling off in the number of certificates issued.

Most of the soldiers of the Civil War are now pensioned under the act of February 6, 1907, and apply for increase only as they become 70 or 75 years of age.

In addition to pension certificates, as above stated, there were also issued during the year 2,769 duplicates of certificates lost or destroyed and allowances of accrued pension made in 20,618 cases, being issues made for payment, in cases of deceased pensioners, from date of last payment to date of death.

Exhibit 11 is a summary of the pending files of the bureau at the close of the year, showing the number of claims of each class on file as well as the number of claims of each class based upon disabilities incurred or service rendered in each of the wars and in the regular establishment.

The number of applications for pension of all kinds pending at the close of the year was 36,793, as against 47,295 pending at the beginning of the year.

In addition to the above there are a large number of claims in the abandoned files of the bureau. If the prosecution of any of these claims is resumed and material evidence is filed therein they will be restored to the pending files for adjudication.

The following is a recapitulation of the pending files:

*Claims pending at close of fiscal year, June 30, 1911.*

| | | | |
|---|---|---|---|
| Civil War | 25,153 | Old wars | 17 |
| War with Spain | 8,386 | Regular establishment | 2,874 |
| Mexican War | 189 | | |
| Indian wars | 173 | Total | 36,793 |
| War of 1812 | 1 | | |

In addition to pension claims there were pending before the bureau June 30, 1911, 28 original applications for military bounty land warrants and 4 applications for duplicates of warrants claimed to have been lost or destroyed.

## ACT OF FEBRUARY 6, 1907.

From the date of its approval to June 30, 1911, there were 629,605 applications for pension or increase of pension filed under the act of February 6, 1907. Some of them, however, were duplicates of former ones filed by the same persons and did not constitute separate claims. During the last year 55,167 certificates were issued under this law.

The following statement shows the number of certificates issued under this law each year:

*Certificates issued under act of February 6, 1907.*

| | | | |
|---|---|---|---|
| 1907 | 119,337 | 1910 | 57,634 |
| 1908 | 257,855 | 1911 | 55,167 |
| 1909 | 67,219 | Total | 557,212 |

Of the above only 21,775 were original allowances or pensions granted to persons never before on the roll.

The following table shows the ages, at the dates the claims were allowed, of the survivors of the Civil War and of the War with Mexico who have been granted pensions under the act of February 6, 1907.

*Survivors of Mexican and Civil Wars, by ages.*

| Age. | Number of survivors. | | Age. | Number of survivors. | |
|---|---|---|---|---|---|
| | Civil War. | Mexican War. | | Civil War. | Mexican War. |
| 62 | 104,857 | | 83 | 1,456 | 228 |
| 63 | 36,289 | | 84 | 1,171 | 174 |
| 64 | 32,412 | | 85 | 844 | 124 |
| 65 | 26,995 | | 86 | 731 | 73 |
| 76 | 25,576 | | 87 | 411 | 51 |
| 67 | 19,518 | | 88 | 264 | 38 |
| 68 | 14,955 | | 89 | 126 | 21 |
| 69 | 8,646 | | 90 | 84 | 13 |
| 60 | 69,181 | | 91 | 48 | 8 |
| 71 | 17,439 | 3 | 92 | 41 | 4 |
| 72 | 14,865 | 1 | 93 | 23 | 2 |
| 73 | 12,425 | 4 | 94 | 16 | 2 |
| 74 | 7,506 | 17 | 95 | 4 | |
| 75 | 18,292 | 69 | 96 | 6 | |
| 76 | 8,693 | 132 | 97 | 5 | |
| 77 | 6,262 | 187 | 98 | 7 | |
| 78 | 5,086 | 265 | 103 | 1 | |
| 79 | 4,038 | 344 | 107 | 1 | |
| 80 | 3,805 | 419 | 108 | 1 | |
| 81 | 2,413 | 369 | | | |
| 82 | 2,086 | 368 | Total | 446,579 | 2,916 |

## ACT OF APRIL 19, 1908.

The second section of the act of April 19, 1908, grants pension at the rate of $12 per month to widows of persons who served 90 days or more in the Army or Navy of the United States during the Civil War, and who were honorably discharged, without regard to their pecuniary condition, if they were married prior to June 27, 1890.

The records show that prior to the close of the last fiscal year 88,224 applications were filed under this law and that up to that time 67,801 certificates had been issued thereunder.

While this is the number of certificates that have been issued under this act since its passage the number of widow pensioners now borne on the roll thereunder is very much larger. As the first section of this act increased from $8 to $12 per month the pensions of all widows on the roll under the act of June 27, 1890, the names of all widows on the roll under that law were transferred to the roll under the act of April 19, 1908, immediately after its enactment.

There have not been any widow pensioners borne on the roll under the act of June 27, 1890, since 1908.

## TEN YEARS' SUMMARY.

The following table shows the operations of the bureau in the adjudication of pension claims each year for the past 10 years. "No benefit cases" are allowances under one law when the claimants are already in receipt of pension at an equal or higher rate under another law. As two pensions under different laws can not be paid to the same person covering the same period, the applicant in a case of this kind is permitted to elect which pension he will receive.

It should be stated that the number of applications filed during each year is not the exact number of separate or distinct claims filed. It is very frequently found upon an examination of the papers, that a declaration is a duplicate of a former application filed by the same person, and hence it is not considered or adjudicated as a separate claim.

*Summary of work for 10 years ending June 30, 1911.*

| Year. | Cases on hand. | Office force. | Applications filed. | Admissions. | Rejections. | No benefit cases. | Total number of cases adjudicated. |
|---|---|---|---|---|---|---|---|
| 1902 | 339,436 | 1,741 | 188,626 | 117,268 | 118,464 | 10,441 | 246,173 |
| 1903 | 304,809 | 1,736 | 225,871 | 130,109 | 113,794 | 8,203 | 252,106 |
| 1904 | 285,523 | 1,734 | 254,333 | 151,211 | 108,114 | 8,725 | 268,050 |
| 1905 | 220,822 | 1,709 | 217,435 | 182,207 | 81,853 | 4,915 | 268,975 |
| 1906 | 182,453 | 1,684 | 201,322 | 138,809 | 82,938 | 4,943 | 226,690 |
| 1907 | 356,181 | 1,534 | 440,517 | 238,249 | 60,573 | 3,892 | 302,715 |
| 1908 | 123,483 | 1,464 | 185,622 | 325,140 | 59,449 | 3,403 | 387,992 |
| 1909 | 66,226 | 1,385 | 152,009 | 123,610 | 52,199 | 1,772 | 177,581 |
| 1910 | 47,295 | 1,317 | 132,012 | 97,207 | 38,032 | 1,198 | 136,437 |
| 1911 | 36,793 | 1,222 | 120,814 | 92,274 | 30,980 | 1,065 | 124,319 |

## SPECIAL ACTS.

Since 1861 there have been granted by special acts of Congress 35,987 pensions and increases of pensions, of which 22,323 are now on the roll, with an annual face value of $6,611,357. Only a part of this is properly chargeable to special acts, as most of the beneficiaries had been previously pensioned under the general laws at lower rates.

During the third session of the Sixty-first Congress 3,586 persons were included in the special acts passed, at the rates specified in the summary following:

*Pensions granted by special act during the third session of the Sixty-first Congress.*

| Rates specified. | Number granted. | Rates specified. | Number granted. |
|---|---|---|---|
| $60 | 1 | $14 | 1 |
| $55 | 1 | $12 | 211 |
| $50 | 44 | $10 | 3 |
| $40 | 84 | $6 | 4 |
| $36 | 132 | Inoperative: | |
| $35 | 4 | $50 | 2 |
| $30 | 1,116 | $36 | 3 |
| $27 | 1 | $30 | 20 |
| $25 | 14 | $24 | 16 |
| $24 | 1,636 | $20 | 3 |
| $20 | 212 | $15 | 1 |
| $18 | 1 | $12 | 3 |
| $17 | 6 | | |
| $16 | 58 | Total | 3,586 |
| $15 | 9 | | |

Of the above, 235 were granted to persons not in receipt of pensions and 3,351 to persons then receiving smaller pensions.

The annual value of said special-act pensions is $1,100,532, and the annual increase in payment due to the same is $518,736.

The following statement shows the number of pensions and increases of pensions granted by special acts during each Congress since March 4, 1861:

*Number of pensions granted by special acts each Congress since March 4, 1861.*

| Congress. | Number. | Congress. | Number. |
|---|---|---|---|
| Thirty-seventh (1861–1863) | 12 | Fifty-first (1889–1891) | 1,388 |
| Thirty-eighth (1863–1865) | 27 | Fifty-second (1891–1893) | 217 |
| Thirty-ninth (1865–1867) | 138 | Fifty-third (1893–1895) | 119 |
| Fortieth (1867–1869) | 275 | Fifty-fourth (1895–1897) | 378 |
| Forty-first (1869–1871) | 85 | Fifty-fifth (1897–1899) | 694 |
| Forty-second (1871–1873) | 167 | Fifty-sixth (1899–1901) | 1,391 |
| Forty-third (1873–1875) | 182 | Fifty-seventh (1901–1903) | 2,171 |
| Forty-fourth (1875–1877) | 98 | Fifty-eighth (1903–1905) | 3.355 |
| Forty-fifth (1877–1879) | 230 | Fifty-ninth (1905–1907) | 6,030 |
| Forty-sixth (1879–1881) | 96 | Sixtieth (1907–1909) | 6,600 |
| Forty-seventh (1881–1883) | 216 | Sixty-first (1909–1911) | 9.649 |
| Forty-eighth (1883–1885) | 598 | | |
| Forty-ninth (1885–1887) | 856 | Total | 35,987 |
| Fiftieth (1887–1889) | 1,015 | | |

## CRIMINAL PROSECUTIONS.

There were 59 new cases presented by the bureau to the Department of Justice for prosecution on account of offenses against the pension laws, and indictments were found in 57 cases.

There were 53 cases brought to trial during the year, in 51 of which convictions were secured. Only 3 of these were cases against persons who had rendered military or naval service. At the close of the year there were 109 cases pending in the hands of United States attorneys.

Two civil suits were instituted; one was disposed of and a judgment for the United States for $538.54 obtained, and one was dismissed by reason of a heavy fine imposed upon the defendant in a criminal case. There were four suits pending in the courts at the close of the year.

Money was recovered as follows: From civil suit, $538.54; from refundments, $1,869.40; total, $2,407.94.

## BOUNTY-LAND WARRANTS.

During the year three original bounty-land warrants were issued, granting 480 acres of land. Service to give title to bounty land must have been for at least 14 days, or in a battle, prior to March 3, 1855, and if the Regular Army or Navy must have been in some war.

The following statement shows the total number of bounty-land warrants of all classes issued by the bureau (including partial estimate of those issued for service in the Revolutionary War) and the number of acres granted to June 30, 1911:

*Bounty-land warrants issued to June 30, 1911.*

| | Number. | Acres. |
|---|---|---|
| War of the Revolution | 16,663 | 2,666,080 |
| War of 1812, acts prior to 1850 | 29,471 | 4,891,520 |
| Act of 1847, Mexican War | 88,274 | 13,213,640 |
| Act of 1850, War of 1812, Mexican and Indian wars | 189,146 | 13,168,560 |
| Act of 1852, War of 1812, Mexican and Indian wars | 11,992 | 694,400 |
| Act of 1855, War of 1812, Mexican and Indian wars | 263,139 | 34,157,350 |
| Total | 598,685 | 68,791,550 |

This bureau has no record of the warrants issued directly from the General Land Office under special acts of Congress or of those issued on account of the Virginia military land grants satisfied by the United States after the cession of the Northwestern Territory, and they are not included in the above table.

## SURVIVING OFFICERS OF THE CIVIL WAR AND LENGTH OF SERVICE.

A report has recently been obtained from the pension agencies showing the number of officers of the Civil War who are now on the pension rolls.

*Officers who served six months or more during the Civil War, with the rank of each.*

| | | | |
|---|---|---|---|
| Major general | 2 | Captain | 5,844 |
| Brigadier general | 13 | First lieutenant | 7,697 |
| Colonel | 173 | Second lieutenant | 5,834 |
| Lieutenant colonel | 423 | | |
| Major | 758 | Total | 20,844 |

In addition to those above given, there are a number of surviving officers of the Civil War on the pension roll who have been granted pensions on account of disabilities contracted by them in service prior to their promotion to the rank of a commissioned officer. Under the general law, the pension is granted as of the rank held at the date of the incurrence of the disability. The number of such officers now on the pension roll who are not included in the above list can not be determined.

In an examination of several hundred thousand claims in this bureau some years ago data was compiled as to the length of service rendered by those who participated in the Civil War, from which the average length of service of the surviving officers may be estimated.

*Estimate of the length of service rendered by the survivors of the Civil War now on the pension roll.*

| Length of service. | Percentage. | Number. | Length of service. | Percentage. | Number. |
|---|---|---|---|---|---|
| Four years or more | 0.042 | 22,255 | | | |
| Three years and less than four | .203 | 107,566 | Three months and less than six months | 0.084 | 44,510 |
| Two years and less than three | .221 | 117,105 | Less than three months | .003 | 1,590 |
| One year and less than two | .244 | 129,292 | | | |
| Six months and less than one year | .203 | 107,566 | Total | | 529,884 |

## PAYMENTS OF PENSION WITHOUT A VOUCHER.

The act making appropriation for the payment of invalid and other pensions of the United States for the fiscal year ending June 30, 1912, and for other purposes, approved March 3, 1911, contains the following provision:

> The Commissioner of Pensions is directed to formulate and embrace in his next annual report a simplified plan for the payment of pensions whereby all preliminary vouchers shall be abolished and the only vouchers required shall be attached to or a part of the payment checks, and the commissioner shall further report what, if any, changes in the law are necessary to carry such plan into effect.

Since the passage of this act the methods employed in the payment of pensions have been given very careful consideration. As a result of such consideration the plan outlined below is recommended. This plan would, if carried into effect, greatly simplify the methods of paying pensions, result in the mailing of the pension checks on the date upon which the pension falls due, eliminate the cost to the pensioners in a large majority of cases of the execution of pension vouchers, and decrease the work to a considerable extent in the drawing and mailing of pension checks.

The plan recommended and the changes in the laws necessary to carry such plan into effect, together with tentative draft of a bill in accordance with the suggestions offered, are herewith submitted:

Section 4764, Revised Statutes, provides that within 15 days immediately preceding the 4th of March, June, September, and December in each year the several agents for the payment of pensions shall prepare a quarterly voucher for every person whose pension is payable at the agency, and transmit the same by mail directed to the address of the pensioner named in such voucher, who, on or before the 4th day of March, June, September, and December next succeeding the date of such voucher, may execute and return the same to the agency at which it was prepared and at which the pension of such person is due and payable. This section, so far as the dates of payment are concerned, was modified by the act of March 3, 1891 (26 Stat. L., 1082), which authorized the Secretary of the Interior to arrange the various agencies for the payment of pensions into three groups, and provided that he might from time to time change any agency from one group to another as he might deem convenient for the transaction of the public business. This act further provides that the first group shall make its quarterly payments of pension on January 4, April 4, July 4, and October 4 of each year; the second group shall make its quarterly payments of pension on February 4, May 4, August 4, and November 4 of each year; and the third group shall make its payments of pension on March 4, June 4, September 4, and December 4 of each year.

I. The plan under consideration contemplates that the act of March 3, 1891 (26 Stat. L., 1082), shall be amended to authorize and empower the Secretary of the Interior to arrange the pensioners instead of the various agencies for the payment of pensions into three groups as he may think proper, and that he may from time to time change any pensioner or class of pensioners from one group to another as he may deem convenient for the transaction of the public business; that the pensioners in the first group shall be paid their quarterly pensions on January 4, April 4, July 4, and October 4 of each year; the pensioners in the second group shall be paid their quarterly pensions on February 4, May 4, August 4, and November 4; and the pensioners in the third group shall be paid their quarterly pensions on March 4, June 4, September 4, and December 4 of each year; and that the Secretary of the Interior shall be further authorized and empowered to cause the payments of pension to be made for the fractional parts of quarters which may be made necessary by the transfer of a pensioner from one group to another. This will so amend section 4764, Revised Statutes, that the pensioners may be arranged in three equal groups, one group or one-third of the pensioners to be paid each month. By having the pensioners instead of the agencies arranged in three groups it will be practicable to place small classes of pensioners all in one agency, regardless of the district in which they reside, which will greatly simplify the rendition of accounts and the auditing of the same by the Auditor of the Treasury for the Interior Department.

As an illustration, reference is made to one class of pensioners—widows of the War of 1812. There are 279 pensioners of this class. These are divided among the 18 agencies, 4 of the agencies having only 3 each, while the Knoxville agency has 85. It is necessary for each of the agencies to render a separate account for this particular class of pensioners. Were this act amended the entire number of 1,812 pensioners could be placed on one agency and accounted for in 1 account rather than in 18. No objection could be urged to placing all of any class of pensioners on one agency on the ground of thereby delaying payment to some of such pensioners, since under the proposed plan of payment the checks of all would be issued and mailed on the date the quarterly payment becomes due. A similar condition to the 1812 pensioners exists as to survivors and widows of the Indian wars. There are 1,387 survivors and 2,629 widows of the Indian wars divided among the 18 agencies; and 1,639 survivors with 5,982 widows of the War with Mexico, also divided among the 18 agencies. As the law now exists it is necessary to place these pensioners on the agency according to the district in which the pensioner lives. With the law amended as suggested, the entire number of survivors and widows of the Mexican War might be placed on one agency, the survivors and widows of the Indian wars on another agency, and the widows of the War of 1812 on another agency, each separate class being accounted for by one agency only, instead of by 18 as now. In addition, pensioners are constantly changing their post-office addresses. It is estimated that some 25,000 or 30,000 pensioners change their post-office addresses each quarter, a very large number going from one agency district to another, thus rendering necessary constant transfers from one agency to another. The pensioners are also changing each month from one branch of the soldiers' home in one agency district to another branch home in another agency district; and each time such a change is made it is necessary to transfer the pensioner from one agency to another. By authorizing the Secretary of the Interior to arrange the pensioners into 3 groups, instead of the agencies, the necessity for the transfer of the pensioners from one agency to another would be largely overcome.

Another very important result could be secured by this change in the law. It is necessary under the present statute to pay all the pensioners on the rolls of one agency at the same time. By the change suggested authorizing the grouping of pensioners instead of agencies, it would be possible to pay one-third of the pensioners on the rolls of any one agency each month, having their quarterly payments falling due in different months. This could readily be done by having the quarterly payment of one class of pensioners on each agency paid their quarterly pensions on January 4, April 4, July 4, and October 4; another class of pensioners on each agency could be paid their quarterly pensions on February 4, May 4, August 4, and November 4; another class could have their quarterly pensions paid on March 4, June 4, September 4, and December 4 of each year. By this arrangement the work of each agency could be so adjusted as to be evenly divided each month, making it possible to use the time of the clerks to much better advantage, the result being a more economical administration.

II. The plan further contemplates that section 4764, Revised Statutes, shall be so modified as to authorize the Secretary of the Interior, in his discretion, to cause the payments of pension to be made in the case of any pensioner as they become due, without requiring the pensioner, or the payee of the pension or any part thereof, to submit a voucher therefor, whenever in his judgment the public interests and the convenience of the pensioner, or the payee of the pension or any part thereof, may be promoted thereby. It is essential to the success of the plan that the Secretary of the Interior shall be authorized, in his discretion, to pay pensions without a voucher in the case of any pensioner as they become due, as it is not believed practicable to discontinue vouchers altogether. It is necessary in the case of a pensioner laboring under a legal disability to require a voucher or certificate from the guardian before making payment therein, to show that the pensioner was living when the pension became due. It is also doubtful whether this new plan may be extended to include foreign pensioners, as this Government has no jurisdiction over the delivery of mail to such pensioners. It is likewise desirable to continue the present system of payment in the cases of inmates of the National Home for Disabled Volunteer Soldiers and Sailors, paying the pension to the treasurer of said home; also in the case of inmates of the Government Hospital for the Insane;

and it is believed to be necessary to require a voucher or certificate from widows who are given an increase of pension on account of minor children, to show that the minor children were alive when the pension became due, the increase of pension on account of such minor children of course terminating upon the death of the children. There are also a number of other cases where vouchers might be desirable such as where one-half of the pension is being paid to the deserted wife of the pensioner, or the entire pension is being paid to the wife where the pensioner is insane or imprisoned as punishment for offenses against the law. The law in such cases authorizes the payment of pension to the wife, she being a woman of good character and dependent upon the pensioner for support. It is, however, necessary before mailing the check to have a voucher or certificate showing that the pensioner was still alive on the date the pension became due.

III. Section 4765, Revised Statutes, provides that upon the receipt of a voucher properly executed and the identity of the pensioner being established and proved in the manner prescribed by the Secretary of the Interior, the agent for the payment of pensions shall immediately draw his check on the proper assistant treasurer or designated depositary of the United States for the amount due such pensioner, payable to his order, and transmit the same, by mail, directed to the address of the pensioner entitled thereto. This section should be modified to provide that all payments made as herein authorized shall be by check on the proper assistant treasurer or designated depositary of the United States, prepared in such form and manner as the Secretary of the Interior may prescribe, and such check shall be transmitted by mail to the last-known address of the payee. It is also essential to the success of the plan under contemplation that the check shall be of a special design, in some such form as follows:

No. ......

INTERIOR,
UNITED STATES PENSION AGENCY.
Washington, D. C., ..............................
(Date.)

ASSISTANT TREASURER OF THE UNITED STATES,
*Baltimore, Md.*

Pay ............................ dollars ($..........) to the order of ........ ................................................ a pensioner of the United States by certificate No. .......

......................................
*U. S. Pension Agent.*
By ......................................
*Clerk.*

This will enable the pension agents to insert the name of the pensioner on the face of the check, together with the certificate number, class, and post-office address. For this purpose addressing machines, which are now in use in many of the agencies, may be employed, a plate being prepared for each pensioner. The checks will be mailed in a specially designed "outlook" envelope in order to prevent errors in mailing. It requires constant watchfulness on the part of the mailing clerks to see that the check of a particular pensioner is inserted in the correct envelope. By using the "outlook" envelope all errors in the mailing of checks will be avoided.

As pensions are due and payable quarterly, the death of any pensioner terminates such pension from the date to which payment was last made. The names of over 4,000 pensioners are dropped from the rolls each month on account of death. Also the remarriage of any pensioner who is on the roll as a widow or dependent mother terminates her pension. It is necessary to provide against the payment of checks drawn in the name of deceased pensioners or of pensioners whose title has ceased, and it is therefore contemplated that some such indorsement shall be printed on the back of the checks, as follows:

> This check is *void* in case the payee died, or remarried if a widow, prior to the date of issue.
>
> It is payable only when personally indorsed in ink by the payee in the presence of two responsible witnesses who shall certify to the identity of the payee with the pensioner.
>
> ....................................
> (Signature of payee.)
>
> We certify that the above indorsement was made in our presence by the payee who exhibited to us the certificate named in this check and is the identical person named therein.
>
> ....................................
>
> ....................................

IV. In order to provide further against the payment of checks issued in the names of deceased pensioners or to widows or dependent mothers who have remarried, the law should provide that postmasters, delivery clerks, letter carriers, and all other postal employees be prohibited from delivering any such mail to any person whomsoever if the addressee has died or removed or, in the case of a widow, is believed by the postal employee intrusted with the delivery of such mail to have remarried, but shall return such mail to the proper office with a statement showing the date of death or remarriage, or that the addressee has removed, as the case may be. It should be further provided that the envelope in which the check is mailed shall contain instructions thereon in accordance with this provision, and, further, that the checks returned as provided on account of the death or remarriage of the pensioner shall be canceled. It is believed that with such a provision the delivery of mail in the case of a deceased pensioner or in the case of a widow or dependent mother who has remarried can be largely prevented, especially with the further provision on the check that such check is void if the payee has died, or remarried if a widow, prior to the date of issue. If this plan shall be adopted, all pensioners will be notified that their checks will be mailed to the last-known post-office address, and that if there has been any change in such address the check will be returned to the pension agency and not be forwarded. This will cause pensioners to notify the pension agent promptly of any change of address in order that the check may be properly mailed.

It is found that the forwarding of pension checks from one post office to another causes a great deal of delay, and frequently the letter thus forwarded falls into the hands of some person of similar name who is not entitled thereto. In a large number of instances checks thus forwarded have been presented for payment by persons representing themselves as the payee of such checks. By having the certificate number on the face of the check, and by having two responsible witnesses certify to the identity of the pensioner, it is believed that the interests of the pensioner will be subserved and that fraud in the indorsement of checks will be practically eliminated.

V. It is further necessary to provide for the cancellation of the checks in order that the issuance of the check may not constitute a disbursement and charge against the appropriation. Unless such checks shall be canceled it will be necessary for the pension agent to be given credit for the amount covered by them, which would necessitate a large increase in the appropriation each year for the payment of pensions, as the accounts would show the disbursements even though such checks should never be presented for payment. By having the checks canceled this increased disbursement may be overcome, as all checks returned as provided may then be canceled and the pension agent in submitting his account will debit himself with all canceled checks, thus leaving the amount covered by such checks to remain to his official credit with his designated depositary. The cancellation of such checks will leave the amount of pension unpaid from the date to which any pensioner was last paid to the date of death as "accrued pension." Under the act of March 2, 1895 (28 Stat. L., 964), the accrued pension due in the case of a person pensioned on account of service or disability is payable, first, to his widow; second, if there is no widow, to his child or children under the age of 16 years at his death; third, in the case of a widow pensioner, to her minor children under the age of 16 years at her death. In the case of a person pensioned on account of service or disability, and in the case of a person pensioned as the last surviving child, who was such minor at the soldier's or sailor's death, and in the case of a person pensioned as a dependent mother, father, sister, or brother, the accrued pension, in so far as may be necessary, may be paid to reimburse the person who bears the expense of the last sickness and burial, provided they do not leave sufficient assets to meet such expense. As will be seen, the law now fully provides for the payment of accrued pension, and no change in such law will be necessary. In fact the cancellation of the check will in a great many cases simplify the payment of the accrued pension. At present when an unindorsed pension check is left by a pensioner on whose estate no administration is required, it is necessary for the widow or person entitled to the proceeds of the check to file a claim therefor with the Auditor of the Treasury for the Interior Department, and evidence must be filed with this claim showing that the expenses of the pensioner's burial have been paid. The widow or other person entitled to the accrued pension must also file a separate claim for the unpaid pension not covered by the check, with the Commissioner of Pensions, and support the same by proper evidence. The proposed plan will leave the entire unpaid pension, including that covered by the canceled check, as accrued pension, and payable as provided in the act of March 2, 1895.

VI. It is also important to provide some means whereby the death of pensioners or the remarriage of persons pensioned as widows or dependent mothers shall be promptly reported to the proper office, in order that the names may be dropped from the roll before the pension for the current quarter shall become due, thus preventing so far as possible the issuance of checks in such cases. It is therefore recommended that the act shall contain further provision requiring postmasters to report promptly to the office from which the pension is paid the death of any pensioner or the remarriage, if a widow, whenever such information comes to the knowledge of their offices, and to give the date of death or remarriage if known. It is believed that with the cooperation of the Post Office Department the plan as outlined can be operated with entire safety to the Government as well as added convenience to the pensioners. There are now some 900,000 pensioners on the roll, and each pensioner must execute a voucher quarterly or four times during the year, the average cost to the pensioners of executing such vouchers being estimated at 25 cents each or $1 per year. In a great many cases and localities, especially with widow pensioners, 50 to 75 cents is charged for the execution of pension vouchers. It is true that in many cases clerks of courts are required to execute vouchers free of expense to pensioners, but it is believed that the average cost for the execution of each voucher will not be far from 25 cents. This would mean a saving to the pensioners of nearly $1,000,000 per annum.

VII. It is further recommended that provision shall be made to the effect that whoever shall forge the indorsement of the person to whose order any pension check is drawn, or whoever with the knowledge that such indorsement is forged shall utter such check, or whoever by falsely personating such person shall receive from any person, firm, corporation, or officer of the Government of the United States the whole or any portion of the amount represented by such check shall be fined not more than $1,000 and imprisoned not more than five years; and, further, that provision be made to the effect that whoever having been granted a pension by the United States shall enlist in the Army or Navy of the United States, or who having been granted a pension as a widow or dependent mother, or who having been granted renewal or continuance of widow's pension shall remarry, or who having been granted a pension as dependent mother or father has ceased to be dependent, shall knowingly receive payment of pension for any period subsequent to the date of such enlistment, marriage, or termination of period of dependence, shall be imprisoned not more than five years and shall be fined not more than $1,000; and that whoever having knowingly procured the allowance of a pension by fraud or by concealment of an essential fact, shall receive from the United States any payment of pension to which he is not entitled, shall be imprisoned not more than five years and fined not more than $1,000. The plan as outlined provides four distinct means for the prevention of fraud in the payment of pensions, as follows:

(*a*) Prevention of delivery of mail in case the pensioner has died or removed or if a widow is believed to have remarried.

(*b*) Indorsement on the pension check that it is void in case the payee has died or remarried if a widow prior to the date of issue.

(*c*) The identification of the pensioner by having the certificate number on the face of the check and the certificate of two identifying witnesses as to the identity of the payee with the pensioner.

(*d*) Provision for the punishment of fraud.

It will, as heretofore stated, further reduce to a considerable extent the work involved in the payment of pensions. Each pension agency is now authorized during quarterly payment to employ temporary clerks for a period not to exceed 10 days. The number of temporary clerks thus employed varies at the different agencies from 5 to 25. If the plan as outlined shall be approved, and the legislation necessary to carry it into effect enacted, it will no longer be necessary to employ temporary clerks during quarterly payments, and this expense will therefore be entirely eliminated. As the checks under this plan will all be issued and mailed on the 4th of the payment month, the pensioners will receive payment at a much earlier date than under the present system, a large number of the pensioners receiving their checks on the 4th of the payment month, the exact date when the pension is due. The adoption of this plan will also eliminate the printing of about 4,000,000 vouchers each year. These vouchers are printed at the Government Printing Office and forwarded by mail to each of the pension agencies. They are prepared at the agencies by inserting the name of the pensioner, the certificate number, and the date of the certificate, and forwarded through the mail to the pensioner, accompanied by a "return penalty" envelope. The voucher is held by the pensioner until the expiration of the quarter, when the same is executed and returned to the pension agent, by mail, in the return penalty envelope. Upon the completion of the quarterly payment all paid vouchers are forwarded by mail to the Auditor for the Interior Department by the pension agents. It will thus be seen that each voucher is carried through the mail four times. The adoption of the plan as outlined will, as before stated, discontinue the printing and mailing of the vouchers and render no longer necessary the "return penalty" envelope now in use, which is also carried through the mail free of charge.

Very careful consideration has also been given to the subject of "voucher checks"—that is, of having a voucher attached to the check as a coupon thereof, the same to be executed before a notary public or other magistrate by the pensioner, and provision made that the check will not be payable unless accompanied by the voucher attached thereto. It is found, however, that in the execution of pension vouchers many errors occur. At some of the agencies it is necessary to return 10 per cent of the vouchers for correction before making payment. It is believed that if a voucher check should be used in the payment of pensions the many errors made by magistrates in the execution thereof would result in bankers declining tc pay such checks upon presentation. It is probable that after the return of a few checks for correction bankers would require all such checks to be deposited for collection, and decline to make payment thereon until satisfied that the check and voucher were acceptable to the Government. This would cause a greater delay in the payment of pensions than is the case under the present system. The check as heretofore outlined is therefore considered superior to the "voucher check," as the check, when indorsed by the pensioner as provided, with two identifying witnesses, becomes a negotiable instrument and will be readily accepted by any banking institution. It is much more simple than the voucher check, and there will be no trouble experienced in its return for correction.

The following is a tentative draft of a bill to carry into effect the recommendations above made:

SECTION 1. That the Secretary of the Interior is hereby authorized in the payment of pensions to arrange the pensioners in three groups as he may think proper, and may from time to time change any pensioner or class of pensioners from one group to another as he may deem convenient for the transaction of the public business.

The pensioners in the first group shall be paid their quarterly pensions on January fourth, April fourth, July fourth, and October fourth, of each year; the pensioners in the second group shall be paid their quarterly pensions on February fourth, May fourth, August fourth, and November fourth of each year; the pensioners in the third group shall be paid their quarterly pensions on March fourth, June fourth, September fourth, and December fourth of each year.

The Secretary of the Interior is hereby authorized to cause payments of pension to be made for the fractional parts of a quarter, which may be made necessary by the transfer of a pensioner from one group to another.

SEC. 2. The Secretary of the Interior is further authorized and empowered, in his discretion, to cause the payments of pension to be made in the case of any pensioner as they shall become due, without requiring the pensioner, or the payee of the pension or any part thereof, to submit a voucher therefor, whenever in his judgment the public interests and the convenience of the pensioner, or the payee of the pension or any part thereof, may be promoted thereby.

SEC. 3. All payments made as herein authorized shall be made by check drawn on the proper assistant treasurer or designated depositary of the United States, prepared in such form and manner as the Secretary of the Interior may prescribe, and such check shall be transmitted by mail to the last known address of the payee.

SEC. 4. Postmasters, delivery clerks, letter carriers, and all other postal employees are hereby prohibited from delivering any such mail to any person whomsoever, if the addressee has died, or removed, or in the case of a widow is believed by the postal employee intrusted with the delivery of such mail to have remarried, but shall return such mail to the proper office with a statement showing the date of death or remarriage, if known, or that the addressee has removed, as the case may be.

SEC. 5. The envelope in which the check is mailed shall contain instructions thereon in accordance with the above provisions. The checks returned as herein provided on account of the death or remarriage of the pensioner shall be canceled.

SEC. 6. Postmasters are hereby required to report promptly to the office from which the pension is paid the death of any pensioner, or the remarriage if a widow, whenever such information comes to the knowledge of their offices, and to give the date of death, or remarriage, if known.

SEC. 7. Whoever shall forge the indorsement of the person to whose order any pension check shall be drawn; or whoever with the knowledge that such indorsement is forged shall utter such check; or whoever by falsely personating such person shall receive from any person, firm, corporation, or officer of the Government of the United States the whole or any portion of the amount represented by such check, shall be fined not more than one thousand dollars and imprisoned not more than five years.

Whoever having been granted a pension by the United States shall enlist in the Army, Navy, or Marine Corps of the United States, or who having been granted a pension as a widow or dependent mother, or who having been granted renewal or continuance of widow's pension, shall marry, or who having been granted a pension as a dependent mother or father has ceased to be dependent shall knowingly receive payment of pension for any period subsequent to the date of such enlistment, marriage, or termination of period of dependence, shall be imprisoned not more than five years and shall be fined not more than one thousand dollars.

Whoever having knowingly procured the allowance of a pension by fraud, or by concealment of an essential fact, shall receive from the United States any payment of pension to which he is not entitled, shall be imprisoned not more than five years and fined not more than one thousand dollars.

## CARD INDEX OF RECORDS AND REMOVAL OF USELESS PAPERS.

In my report for the fiscal year ended June 30, 1910, I stated that 3,067,611 of the estimated 7,000,000 cards that would be required for the card index of the records of this bureau had been written, compared, arranged, and filed. During the fiscal year just closed 1,040,554 cards were written, compared, arranged, and filed, bringing the total number of completed cards now in use in lieu of the old, worn-out books to 4,108,165.

The carding of the old war and the Navy records has not progressed as rapidly as the carding of the Army records. It is more difficult to get complete records of sailors than of soldiers for the reason that they were often transferred from one ship to another, and the card index will indicate the ships on which they served.

As stated in my last annual report, on the fourth floor of the building are stored all admitted claims. Nearly all of the space on this floor is utilized, and more will be needed in the near future for admitted and abandoned claims. An estimate of the papers filed there was made, with the result that it was found there were 910 long tons weight occupying 27 rooms. Congress, at the request of the Secretary, gave permission to take from the old cases the waste paper. There have been removed from the cases and turned over to the contractor 423,210 pounds, or more than 180 long tons of waste paper. Eight rooms have been vacated.

The papers removed from these cases are calls for evidence which have been returned with the evidence, orders for medical examination, printed and written instructions to examining surgeons, letters of inquiry as to status, duplicate jackets, file slips, congressional and attorney call-up slips, old envelopes, old canceled pension certificates, powers of attorney and substitution, transfers, fee agreements which have served their purpose, and credibility replies from postmasters. The instructions are that no paper of present or future value for historical purposes, or for any other purpose, shall be removed from these cases; and I have every reason to believe that the instructions are carefully carried out. Many misfiled papers are found and returned to their proper places. As stated in my last report, this work can be appreciated only by those who know the existing conditions.

## CHECKING THE PENSION ROLL.

Last fall it became apparent from letters received in the bureau and certain press articles that the impression obtained in some parts of the country that the pension roll was honeycombed with fraud. To settle the question beyond all controversy by determining whether the pension roll was a roll of honor or otherwise, I obtained verbal permission from those in authority over me to check up the pension roll. I mean by that, ascertaining whether every person drawing a pension is the person entitled to it. The task is no small one, as the bureau must first get the names and last-known post-office addresses of the pensioners from the pension agents, and then field men must go from pensioner to pensioner to learn whether the proper persons are drawing pension.

This work was begun last December. The Washington agency roll is practically completed and the examiners are now working on the Knoxville roll. Up to this date 47,181 pensioners have been seen and questioned as to their identity and their certificates examined. As a result of this checking up 5 widows' names have been dropped from the rolls for violation of the act of August 7, 1882, 1 on the ground that she is not the legal widow of the soldier, and the names of 2 invalid pensioners because it was shown that they deserted from former services and received bounties for reenlistment. There are now under consideration with a view to dropping the names of 10 widow pensioners for violation of the act of August 7, 1882; 2 on the ground that the pensioners are not the legal widows of the soldiers; 3 who have remarried and have continued to draw pension; 1 invalid pensioner found to have been a deserter; and 2 invalid pensioners who served in the Confederate service and enlisted in the Union Army subsequent to January 1, 1865; making 18 more whose names will probably have to be dropped, a total of 26 in all out of 47,181. There are a few other cases where doubt exists as to title which will have to be specially examined to determine the facts.

The special examiners on this work have succeeded in causing the arrest of two bogus special examiners, as well as in ascertaining the names of two others, for whom a thorough search is now being made.

Up to date it has been found that 210 pensioners are dead whose names had not been reported to the bureau. In none of these cases had the pension been drawn.

A few irregularities in executing vouchers were discovered. A large number of pension certificates with blank vouchers were found in the hands of a pension attorney. While he declared that his purpose in holding them was in the interest of the pensioners, it was discovered, that for executing vouchers his fee ranged from 50 cents to $3 each.

It was decided to check up the rolls of the Washington and Knoxville pension agencies and by the result to determine whether the rolls of the other agencies should be looked into. I am of the opinion that should Congress permit the payment of pensions direct by check, further checking up of the agencies would not be necessary. The safeguards to be thrown about the payments, as contemplated by the bureau, would make it very difficult for anyone not entitled to pension to get possession of a check and to obtain the indorsements required to secure payment thereon.

The special examiners employed upon this work have paid particular attention to the marital relations of the pensioners and have reported thereon, and the data so obtained will assist greatly in disposing of widows' claims when the same are filed. Whenever it has been ascertained that a pensioner is known by any name other than that under which pensioned a full investigation has been made to prove identity and age at enlistment, which will also be of benefit in adjudicating claims which may hereafter be filed.

It may be added that the department commanders and the commanders of Grand Army posts throughout the country, who heartily approve of this work, have rendered valuable assistance to the special examiners by giving information relative to pensioners.

## REVOLUTIONARY WAR RECORDS.

There have been placed in flat files the papers in 59,890 claims based upon service in the Revolutionary War. Approximately 20,000 claims in the rejected files and 2,507 bounty-land grants remain to be disposed of. There are 13 clerks employed on this work and on that of writing letters giving the military history during the Revolutionary War of the ancestors of those who now seek to join the Sons or the Daughters of the Revolution or other historical societies connected therewith. This correspondence is increasing rapidly and will soon necessitate the assignment of more clerks to this section.

## HISTORICAL.

There are now no pensioners on account of the Revolutionary War on the roll, the last pensioner of that war having died during the last year. Mrs. Phoebe M. Palmeter, who was pensioned by a special act of Congress as the daughter of Jonathan Wooley, who served in a New Hampshire company, died at Brookfield, N. Y., April 25, 1911, aged 90 years. The last widow pensioner of that war was Esther S. Damon, of Plymouth Union, Vt., who died November 11, 1906, aged 92 years. The last survivor of the Revolution was Daniel F. Bakeman, who died at Freedom, Cattaraugus County, N. Y., April 5, 1869, aged 109 years 6 months and 8 days.

The last surviving pensioned soldier of the War of 1812 was Hiram Cronk, of Ava, N. Y., who died May 13, 1905, aged 105 years and 16 days. The names of 279 widows of the War of 1812 remained on the pension roll June 30, 1911.

Mrs. Brittannia W. Kennon, who died during the last year at Tudor Place NW., in this city, probably drew a pension as a widow longer than any other person. She was married to Beverley Kennon by the pastor of Christ Church, Georgetown, D. C., December 8, 1842. Her husband was a captain in the Navy, and was killed February 28, 1844, by the bursting of a cannon on the U. S. S. *Princeton*, two members of the Cabinet of President Tyler having been killed at the same time. She was granted a pension under the laws existing at that time at the rate of $50 per month from the date her husband was killed, and she received such pension from that time until her death, January 27, 1911, a period of almost 67 years. She was a great-granddaughter of Martha Washington, wife of the first President of the United States. She was born January 28, 1815, and was 96 years of age at the time of her death.

## MISCELLANEOUS.

There were 1,512 claims for reimbursement for expenses of the last sickness and burial of deceased pensioners pending at the beginning of the year, 7,417 such claims were received during the year, and 72 which had been formerly disallowed were reopened, making a total of 9,001. Of these, 5,808 were allowed, 1,166 disallowed, and 600 abandoned, leaving 1,427 pending at the close of the year.

The mail received during the year numbered 1,694,236 pieces, and the outgoing mail aggregated 863,069 pieces, making a total of 2,557,305 pieces handled, an average of over 8,300 daily.

During the year 124,319 pension claims were adjudicated, of which 92,274 were admitted, 30,980 rejected, and 1,065 approved in which no certificates were issued because they would not have benefited the applicants. There were also 40 claims for military bounty-land warrants adjudicated during the year, of which 3 were allowed and 37 rejected.

Out of 2,962 appeals decided by the department during the year the bureau was reversed in only 187 cases, being 6.31 per cent of the number disposed of.

Since the passage of the act of March 3, 1899, providing for the division of pensions of resident pensioners of the United States who desert their wives or minor children, or who are inmates of national or State soldiers' and sailors' homes, 13,423 claims have been filed thereunder, 7,209 of which have been allowed and 5,987 rejected, leaving 227 pending.

During the year 147 pensioners were dropped from the roll for various causes after due legal notice had been given. The pensions of 20 persons were reduced, and reissues were made in 56 cases to recover erroneous payments.

Most of the surgeons appointed to examine applicants for pension or increase of pension are organized into boards of three members each; but it is sometimes necessary to have single surgeons or specialists make examinations of claimants who can not go before a board, or who require the attention of a specialist. On June 30, 1911, there were 4,631 examining surgeons, and during the year 26,220 examinations were made at an expense of $206,768.33.

During the year 120,814 new applications for pension, or increase of pension, were received in the bureau. There were also received 6,523 applications for accrued pension due at death of pensioners, 7,417 applications for reimbursement for the expenses of the last sickness and burial of deceased pensioners, 713 applications for division of pension, and 52 applications for military bounty-land warrants.

The number of cases for special examination on hand July 1, 1910, was 2,823, and the number referred for such examination during the year was 5,813, making a total of 8,636. Of these, 5,710 were disposed of, leaving 2,926 on hand June 30, 1911. The average number of special examiners in the field during the year was 121.

Very respectfully,

J. L. DAVENPORT,
*Commissioner of Pensions.*

The SECRETARY OF THE INTERIOR.

**Exhibit 1.**—*Pensioners added to and dropped from the roll, the number of pensioners on the roll at the beginning and at the close of the year, and the amount disbursed to each class of pensioners during the year ended June 30, 1911.*

| Classes. | Number of pensioners at beginning of year. | Gains to the roll. |  |  | Gains to classes by transfer from other classes. |  |  |  |  | Losses to the roll. |  |  |  |  | Losses to classes. | Number on roll at end of year. | Disbursements. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  | Original. | Restoration. | Renewal. | Original. | Restoration. | Renewal. | Additional. | Reissue. | By death. | By remarriage. | By limitation. | Failure to claim. | Other causes. |  |  |  |
| *Regular establishment.* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Army: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Invalids | 10,318 | 768 | 3 | 11 |  |  | 1 |  | 6 | 393 |  |  | 9 | 15 | 30 | 10,660 | $1,800,635.56 |
| Widows, etc | 2,648 | 228 | 1 | 3 |  |  |  |  |  | 110 | 27 | 15 | 2 | 5 |  | 2,721 | 534,403.14 |
| Navy: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Invalids | 2,862 | 392 | 6 | 6 | 1 |  |  |  | 1 | 120 |  |  | 5 | 37 | 9 | 3,097 | 558,095.78 |
| Widows, etc | 1,393 | 129 |  |  |  |  |  |  |  | 45 | 13 | 5 |  | 1 |  | 1,458 | 304,699.71 |
| *Civil War.* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Act Feb. 6, 1907: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Army | 349,134 | 2,037 | 52 | 28 |  | 2 | 91 |  | 17,723 | 22,478 |  |  | 37 | 7 | 2,725 | 343,820 | 59,507,072.53 |
| Navy | 13,299 | 190 | 2 | 1 |  |  |  |  | 567 | 974 |  |  | 2 |  | 73 | 13,010 | 2,201,819.54 |
| General law: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Army— |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Invalids | 120,401 | 30 | 14 | 10 |  | 6 | 851 |  | 2,923 | 7,830 |  |  | 14 | 2 | 4,465 | 111,924 | 31,487,752.97 |
| Nurses | 442 | 6 |  |  |  |  |  |  |  | 42 |  |  |  |  |  | 406 | 61,856.93 |
| Widows, etc | 73,597 | 791 | 8 | 385 | 1 | 1 |  |  | 193 | 4,696 | 194 | 111 | 28 | 18 |  | 69,929 | 10,950,586.65 |
| Navy— |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Invalids | 1,180 |  |  |  |  |  | 4 |  | 87 | 99 |  |  |  |  | 33 | 1,139 | 321,001.79 |
| Widows, etc | 1,028 | 9 |  | 3 |  |  |  |  | 14 | 70 | 1 |  |  | 2 |  | 981 | 172,910.33 |
| Act June 27, 1890: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Army— |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Invalids | 75,865 | 203 | 47 | 5 |  | 2 | 1 | 11 |  | 3,697 |  |  | 75 | 15 | 14,397 | 57,950 | 9,497,564.05 |
| Minors, etc | 4,196 | 712 | 6 | 9 |  |  |  |  |  | 17 |  | 681 | 14 | 2 | 1 | 4,208 | 912,994.61 |
| Navy— |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Invalids | 2,736 | 18 | 5 |  |  |  |  |  |  | 165 |  |  | 8 | 2 | 543 | 2,041 | 322,594.07 |
| Minors, etc | 148 | 28 |  |  |  |  |  |  |  |  |  | 26 |  |  |  | 150 | 33,881.77 |
| Act Apr. 19, 1908: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Army widows | 212,032 | 17,815 | 33 | 11 |  |  |  |  |  | 9,790 | 569 |  | 59 | 41 | 194 | 219,238 | 31,448,216.19 |
| Navy widows | 8,794 | 592 | 2 |  |  |  |  |  |  | 402 | 9 |  |  | 2 | 15 | 8,960 | 1,313,414.08 |

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***War with Spain.*** | | | | | | | | | | | | | | | | | |
| Army: | | | | | | | | | | | | | | | | | |
| Invalids | 22,063 | 947 | 17 | 31 | | | | | 1 | 323 | | | 22 | 68 | 2 | 22,644 | 2,999,776.96 |
| Widows, etc | 4,817 | 214 | | 6 | | | 1 | | 1 | 149 | 35 | 30 | 3 | 4 | 1 | 4,817 | 787,431.05 |
| Navy: | | | | | | | | | | | | | | | | | |
| Invalids | 720 | 25 | 1 | 2 | | | | | | 7 | | | | 2 | | 739 | 111,123.67 |
| Widows, etc | 289 | 13 | | | | | | | | 9 | 1 | 2 | | | | 290 | 52,919.57 |
| ***War of 1812.*** | | | | | | | | | | | | | | | | | |
| Widows | 338 | | | | | | | | | 58 | | | | 1 | | 279 | 44,347.45 |
| ***War with Mexico.*** | | | | | | | | | | | | | | | | | |
| Survivors | 2,042 | 2 | | | | | | | | 404 | | | 1 | | | 1,639 | 428,221.22 |
| Widows | 6,359 | 205 | 2 | | | | | | | 564 | 10 | | 5 | 4 | 1 | 5,982 | 894,096.89 |
| ***Indian wars.*** | | | | | | | | | | | | | | | | | |
| Survivors | 1,560 | 21 | | | | | | | | 194 | | | | | | 1,387 | 168,688.24 |
| Widows | 2,822 | 115 | | | | | | | | 297 | 8 | | 3 | | | 2,629 | 406,398.28 |
| Total | 921,083 | 25,490 | 199 | 511 | 2 | 11 | 949 | 11 | 21,516 | 52,933 | 867 | 870 | 287 | 228 | 22,489 | 892,098 | 157,323,103.03 |

| | |
|---|---|
| Amount disbursed on account of regular establishment | $3,197,834.19 |
| Amount disbursed on account of Civil War | 148,231,665.51 |
| Amount disbursed on account of War with Spain | 3,951,251.25 |
| Amount disbursed on account of War of 1812 | 44,347.45 |
| Amount disbursed on account of War with Mexico | 1,322,918.11 |
| Amount disbursed on account of Indian wars | 575,086.52 |
| Amount disbursed by Treasury settlements | 2,057.32 |
| Total | 157,326,160.35 |

EXHIBIT 2.—*Number and amount of first payments in original, increase, reissue, restoration, and other cases made during the fiscal year ended June 30, 1911.*

| Class. | | Original. | | Increase and reissue. | | Supplemental. | | Additional. | | Restoration and renewal. | | Total. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number. | Amount. | Number. | Amount. | Number. | Amount. | Number. | Amount. | Number. | Amount. | Number. | Amount. |
| Regular establishment: | | | | | | | | | | | | | |
| Army | Invalids | 784 | $83,559.03 | 702 | $28,276.33 | | | | | 11 | $432.25 | 1,497 | $112,267.61 |
| | Widows, etc | 240 | 34,996.76 | 20 | 2,011.43 | | | | | 2 | 394.80 | 262 | 37,402.99 |
| Navy | Invalids | 406 | 41,165.99 | 167 | 7,637.15 | 1 | $49.17 | | | 17 | 2,754.46 | 591 | 51,606.77 |
| | Widows, etc | 125 | 12,704.05 | 10 | 739.54 | | | | | | | 135 | 13,443.59 |
| Civil War, act Feb. 6, 1907: | | | | | | | | | | | | | |
| Army | | 2,094 | 150,168.90 | 50,402 | 1,580,356.10 | 11 | 359.80 | | | 238 | 62,627.52 | 52,745 | 1,793,512.32 |
| Navy | | 197 | 9,582.74 | 2,274 | 76,306.08 | | | | | 3 | 1,381.13 | 2,474 | 87,269.95 |
| Civil War, general law: | | | | | | | | | | | | | |
| Army | Invalids | 42 | 9,368.04 | 10,119 | 491,436.69 | 42 | 10,551.54 | | | 664 | 37,402.98 | 10,867 | 548,759.25 |
| | Nurses | 6 | 183.20 | 2 | 103.73 | | | | | | | 8 | 286.93 |
| | Widows, etc | 840 | 135,944.03 | 325 | 18,316.28 | 19 | 1,301.53 | | | 383 | 45,202.58 | 1,567 | 200,764.42 |
| Navy | Invalids | 5 | 294.90 | 127 | 6,908.25 | 2 | 3,891.00 | | | 2 | 89.07 | 136 | 11,183.22 |
| | Widows, etc | 8 | 340.53 | 19 | 954.20 | | | | | 2 | 1,010.93 | 29 | 2,305.66 |
| Civil War, act June 27, 1890: | | | | | | | | | | | | | |
| Army | Invalids | 204 | 75,896.80 | 252 | 7,140.34 | 55 | 20,967.80 | 21 | $4,842.88 | 77 | 19,154.39 | 609 | 128,002.21 |
| | Minors, etc | 724 | 178,037.67 | 9 | 1,027.66 | 9 | 296.66 | | | 13 | 1,737.80 | 755 | 181,099.79 |
| Navy | Invalids | 18 | 6,499.57 | 13 | 383.80 | 2 | 1,270.40 | | | 5 | 1,448.46 | 38 | 9,602.23 |
| | Minors, etc | 31 | 6,104.30 | | | | | | | 1 | 230.40 | 32 | 6,334.70 |
| Civil War, act Apr. 19, 1908: | | | | | | | | | | | | | |
| Army widows | | 18,091 | 1,084,705.33 | 24 | 2,939.52 | 51 | 23,588.23 | | | 64 | 13,029.71 | 18,230 | 1,124,262.79 |
| Navy widows | | 587 | 49,548.19 | | | 4 | 3,320.34 | | | 2 | 1,400.00 | 593 | 54,268.53 |
| War with Spain: | | | | | | | | | | | | | |
| Army | Invalids | 1,051 | 298,661.49 | 1,163 | 36,818.63 | | | | | 45 | 5,999.19 | 2,259 | 341,479.31 |
| | Widows, etc | 211 | 44,025.43 | 4 | 410.20 | 2 | 740.00 | | | 3 | 580.80 | 220 | 45,756.43 |
| Navy | Invalids | 29 | 4,477.64 | 27 | 1,782.52 | | | | | 3 | 844.00 | 59 | 7,104.16 |
| | Widows, etc | 12 | 1,677.63 | | | | | | | | | 12 | 1,677.63 |
| War of 1812 | Widows | | | 1 | 12.00 | | | | | | | 1 | 12.00 |
| War with Mexico | Survivors | 4 | 2,635.66 | 9 | 553.31 | | | | | | | 13 | 3,188.97 |
| | Widows | 209 | 33,309.45 | 1 | 82.20 | | | | | 2 | 982.00 | 212 | 34,373.65 |
| Indian wars | Survivors | 26 | 10,158.18 | 131 | 5,365.54 | | | | | 5 | 65.06 | 161 | 15,588.78 |
| | Widows | 127 | 31,371.71 | | | | | | | | | 127 | 31,371.71 |
| Total | | 26,070 | 2,305,417.22 | 65,801 | 2,269,561.50 | 198 | 66,336.47 | 21 | 4,842.88 | 1,542 | 196,767.53 | 93,632 | 4,842,925.60 |

**Exhibit 3.**—*Appropriations for pensions and disbursements on account thereof for the fiscal year ended June 30, 1911, and unexpended balances at close of year.*

| Items of appropriation. | Appropriations. | | | | Disbursements. | | | Balances. | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Amount appropriated, act June 25, 1910. | Amount of deficiency appropriation, act Mar. 4, 1911. | Repayments to the appropriation. | Total. | Amount disbursed by United States pension agents. | Amount disbursed by Treasury settlements. | Total amount disbursed. | Balance remaining in the hands of United States pension agents June 30, 1911. | Balance remaining in the United States Treasury June 30, 1911. | Available balance June 30, 1911. |
| Army pensions | $150,000,000.00 | $2,095,000.00 | $7,129.87 | $152,102,129.87 | $151,930,642.72 | $2,032.32 | $151,932,675.04 | $114,591.08 | $54,863.75 | $169,454.83 |
| Navy pensions | 5,000,000.00 | 405,000.00 | 229.87 | 5,405,229.87 | 5,392,460.31 | 25.00 | 5,392,485.31 | 12,095.26 | 649.30 | 12,744.56 |
| Total pensions | 155,000,000.00 | 2,500,000.00 | 7,359.74 | 157,507,359.74 | 157,323,103.03 | 2,057.32 | 157,325,160.35 | 126,686.34 | 55,513.05 | 182,199.39 |
| Fees of examining surgeons, pensions | 250,000.00 | | 3.00 | 250,003.00 | 158,414.20 | | 158,414.20 | 29,085.80 | 62,503.00 | 91,588.80 |
| Salaries and expenses of pension agents: | | | | | | | | | | |
| Salaries, pension agents | 72,000.00 | | | 72,000.00 | 72,000.00 | | 72,000.00 | | | |
| Clerk hire, pension agencies | 400,000.00 | | | 400,000.00 | 384,507.15 | | 384,507.15 | 6,948.68 | 8,544.17 | 15,492.85 |
| Rent for pension agency at New York, N. Y | 4,500.00 | | | 4,500.00 | 4,500.00 | | 4,500.00 | | | |
| Examinations, pension agencies | 1,500.00 | | | 1,500.00 | | 168.95 | 168.95 | | 1,331.05 | 1,331.05 |
| Contingent expenses, pension agencies | 30,000.00 | | | 30,000.00 | 7,474.35 | 2,229.41 | 9,703.76 | 2,070.09 | 18,226.15 | 20,296.24 |
| Total | 508,000.00 | | | 508,000.00 | 468,481.50 | 2,398.36 | 470,879.86 | 9,018.77 | 28,101.37 | 37,120.14 |
| Grand total | 155,758,000.00 | 2,500,000.00 | 7,362.74 | 158,265,362.74 | 157,949,998.73 | 4,455.68 | 157,954,454.41 | 164,790.91 | 146,117.42 | 310,908.33 |

In addition to the above there were disbursed during the fiscal year ended June 30, 1911, the following sums, chargeable to the appropriation for the fiscal year ended June 30, 1910:

| | |
|---|---|
| Fees of examining surgeons, pensions, pension agent at Washington, D. C | $60,642.55 |
| Fees of examining surgeons, pensions, by Treasury settlements | 569.95 |
| Total | 61,212.50 |

Of the amount $5,392,485.31 disbursed for Navy pensions $378,159.22 was paid from the Navy pension fund under act of June 25, 1910.

EXHIBIT 4.—*Amount disbursed at United States pension agencies during the fiscal year ended June 30, 1911, as shown by accounts current.*

| Agency. | Pensions. | | | Fees of examining surgeons, pensions. | Salaries. | Clerk hire. | Rent. | Contingent expenses. | Grand total. |
|---|---|---|---|---|---|---|---|---|---|
| | Army. | Navy. | Total. | | | | | | |
| Augusta | $2,845,126.91 | | $2,845,126.91 | | $4,000.00 | $7,798.00 | | $41.69 | $2,856,966.60 |
| Boston | 8,054,134.19 | $1,113,004.95 | 9,167,139.14 | | 4,000.00 | 22,467.51 | | 200.07 | 9,193,806.72 |
| Buffalo | 6,823,797.67 | | 6,823,797.67 | | 4,000.00 | 18,800.34 | | 559.99 | 6,847,158.00 |
| Chicago | 11,276,687.48 | 1,084,331.57 | 12,361,019.05 | | 4,000.00 | 28,014.50 | | 450.88 | 12,393,484.43 |
| Columbus | 15,820,209.47 | | 15,820,209.47 | | 4,000.00 | 35,799.50 | | 354.35 | 15,860,363.32 |
| Concord | 2,721,484.62 | | 2,721,484.62 | | 4,000.00 | 7,397.67 | | 372.01 | 2,733,254.30 |
| Des Moines | 8,808,534.14 | | 8,808,534.14 | | 4,000.00 | 21,589.66 | | 77.25 | 8,834,201.05 |
| Detroit | 6,723,887.86 | | 6,723,887.86 | | 4,000.00 | 17,981.83 | | 153.45 | 6,746,023.14 |
| Indianapolis | 10,624,002.28 | | 10,624,002.28 | | 4,000.00 | 20,210.22 | | 136.01 | 10,648,348.51 |
| Knoxville | 10,046,239.13 | | 10,046,239.13 | | 4,000.00 | 24,766.83 | | 939.90 | 10,075,945.86 |
| Louisville | 4,201,535.04 | | 4,201,535.04 | | 4,000.00 | 12,000.00 | | 159.68 | 4,217,694.72 |
| Milwaukee | 8,233,535.90 | | 8,233,535.90 | | 4,000.00 | 18,845.23 | | 88.88 | 8,256,470.01 |
| New York | 7,430,683.83 | 1,036,394.50 | 8,467,078.33 | | 4,000.00 | 23,575.14 | $4,500.00 | 279.37 | 8,499,432.84 |
| Philadelphia | 8,207,573.69 | 657,600.61 | 8,865,174.30 | | 4,000.00 | 22,341.33 | | 335.44 | 8,891,851.07 |
| Pittsburgh | 7,075,940.01 | | 7,075,940.01 | | 4,000.00 | 19,819.75 | | 206.22 | 7,099,965.98 |
| San Francisco | 7,014,437.32 | 351,837.50 | 7,366,274.82 | | 4,000.00 | 19,711.50 | | 213.32 | 7,390,199.64 |
| Topeka | 18,139,064.10 | | 18,139,064.10 | | 4,000.00 | 37,818.81 | | 128.01 | 18,181,010.92 |
| Washington | 7,883,769.08 | 1,149,291.18 | 9,033,060.26 | $158,414.20 | 4,000.00 | 25,569.33 | | 2,777.83 | 9,223,821.62 |
| Total | 151,930,642.72 | 5,392,460.31 | 157,323,103.03 | 158,414.20 | 72,000.00 | 384,507.15 | 4,500.00 | 7,474.35 | 157,949,998.73 |

EXHIBIT 5.—*Number of pensioners, by classes, on the rolls of each agency, together with the total number on the rolls June 30, 1911 and 1910.*

| Agency. | Regular establishment. | | | | Civil War. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Act of Feb. 6, 1907. | | General law. | | | | | Act of June 27, 1890. | | | |
| | Army. | | Navy. | | Army. | Navy. | Army. | | | Navy. | | Army. | | Navy. | |
| | Invalids. | Widows, etc. | Invalids. | Widows, etc. | | | Invalids. | Nurses. | Widows, etc. | Invalids. | Widows, etc. | Invalids. | Minors, etc. | Invalids. | Minors, etc. |
| Augusta | 85 | 32 | ........ | ........ | 6,062 | ........ | 2,994 | 3 | 1,835 | ........ | ........ | 786 | 62 | ........ | ........ |
| Boston | 309 | 151 | 314 | 199 | 21,900 | 2,897 | 2,981 | 26 | 4,333 | 265 | 309 | 1,489 | 141 | 307 | 28 |
| Buffalo | 306 | 103 | ........ | ........ | 15,002 | ........ | 5,124 | 9 | 4,362 | ........ | ........ | 2,364 | 101 | ........ | ........ |
| Chicago | 527 | 97 | 827 | 196 | 26,135 | 2,473 | 8,638 | 37 | 5,621 | 403 | 240 | 4,305 | 299 | 564 | 28 |
| Columbus | 628 | 140 | ........ | ........ | 30,807 | ........ | 15,743 | 29 | 8,958 | ........ | ........ | 6,748 | 308 | ........ | ........ |
| Concord | 86 | 22 | ........ | ........ | 4,724 | ........ | 2,991 | 3 | 2,014 | ........ | ........ | 679 | 51 | ........ | ........ |
| Des Moines | 330 | 49 | ........ | ........ | 21,946 | ........ | 7,037 | 29 | 3,698 | ........ | ........ | 3,443 | 174 | ........ | ........ |
| Detroit | 332 | 80 | ........ | ........ | 13,187 | ........ | 6,899 | 11 | 3,687 | ........ | ........ | 2,774 | 139 | ........ | ........ |
| Indianapolis | 649 | 86 | ........ | ........ | 15,405 | ........ | 15,051 | 28 | 7,081 | ........ | ........ | 3,342 | 234 | ........ | ........ |
| Knoxville | 1,113 | 315 | ........ | ........ | 23,518 | ........ | 4,275 | 22 | 2,772 | ........ | ........ | 5,064 | 646 | ........ | ........ |
| Louisville | 563 | 139 | ........ | ........ | 8,224 | ........ | 3,109 | 5 | 2,235 | ........ | ........ | 1,913 | 285 | ........ | ........ |
| Milwaukee | 382 | 90 | ........ | ........ | 20,169 | ........ | 6,312 | 24 | 3,554 | ........ | ........ | 2,889 | 178 | ........ | ........ |
| New York | 618 | 290 | 536 | 278 | 18,485 | 2,669 | 2,822 | 19 | 3,254 | 148 | 157 | 1,543 | 121 | 304 | 24 |
| Philadelphia | 371 | 151 | 302 | 190 | 20,708 | 1,590 | 3,624 | 17 | 3,366 | 105 | 119 | 2,537 | 186 | 159 | 20 |
| Pittsburgh | 170 | 58 | ........ | ........ | 16,347 | ........ | 4,396 | 11 | 2,770 | ........ | ........ | 2,960 | 155 | ........ | ........ |
| San Francisco | 941 | 209 | 330 | 58 | 19,986 | 983 | 3,184 | 40 | 1,584 | 53 | 23 | 2,512 | 177 | 146 | 12 |
| Topeka | 1,012 | 167 | ........ | ........ | 44,334 | ........ | 12,349 | 43 | 5,783 | ........ | ........ | 9,106 | 667 | ........ | ........ |
| Washington | 2,238 | 542 | 788 | 537 | 16,881 | 2,398 | 4,395 | 50 | 3,022 | 165 | 138 | 3,496 | 284 | 561 | 43 |
| Total | 10,660 | 2,721 | 3,097 | 1,458 | 343,820 | 13,010 | 111,924 | 406 | 69,929 | 1,139 | 981 | 57,950 | 4,208 | 2,041 | 150 |

EXHIBIT 5.—*Number of pensioners, by classes, on the rolls of each agency, together with the total number on the rolls June 30, 1911 and 1910*—Con.

| Agency. | Civil War—Contd. | | War with Spain. | | | | War of 1812. | War with Mexico. | | Indian wars. | | Number of pensioners June 30, 1911. | Number of pensioners June 30, 1910. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Act of Apr. 19, 1908. | | | | | | | | | | | | |
| | Widows. | | Army. | | Navy. | | | | | | | | |
| | Army. | Navy. | Invalids. | Widows, etc. | Invalids. | Widows. etc. | Widows. | Survivors. | Widows. | Survivors. | Widows. | | |
| Augusta | 3,046 | ........ | 268 | 47 | ........ | ........ | 5 | 4 | 25 | 1 | 2 | 15,257 | 15,897 |
| Boston | 15,414 | 2,174 | 677 | 373 | 97 | 38 | 7 | 13 | 78 | 4 | 14 | 54,538 | 56,668 |
| Buffalo | 9,796 | ........ | 830 | 210 | ........ | ........ | 19 | 14 | 45 | ........ | 7 | 38,292 | 39,941 |
| Chicago | 15,599 | 1,483 | 1,430 | 257 | 146 | 87 | 19 | 128 | 406 | 7 | 58 | 69,955 | 72,102 |
| Columbus | 21,145 | ........ | 2,440 | 346 | ........ | ........ | 20 | 68 | 206 | 6 | 11 | 87,603 | 90,490 |
| Concord | 3,226 | ........ | 333 | 56 | ........ | ........ | 4 | 2 | 21 | ........ | 1 | 14,213 | 14,845 |
| Des Moines | 11,439 | ........ | 987 | 151 | ........ | ........ | 3 | 65 | 213 | 7 | 26 | 49,597 | 51,314 |
| Detroit | 8,107 | ........ | 1,394 | 214 | ........ | ........ | 3 | 22 | 61 | 1 | 6 | 36,917 | 38,330 |
| Indianapolis | 11,420 | ........ | 2,015 | 165 | ........ | ........ | 13 | 72 | 265 | 1 | 14 | 55,841 | 57,518 |
| Knoxville | 14,044 | ........ | 2,315 | 643 | ........ | ........ | 85 | 422 | 1,978 | 464 | 1,577 | 59,253 | 61,276 |
| Louisville | 6,075 | ........ | 1,047 | 231 | ........ | ........ | 9 | 69 | 336 | 4 | 10 | 24,254 | 24,933 |
| Milwaukee | 10,511 | ........ | 1,231 | 224 | ........ | ........ | 6 | 31 | 97 | 5 | 18 | 45,721 | 46,989 |
| New York | 15,281 | 2,095 | 892 | 416 | 131 | 54 | 15 | 48 | 164 | 3 | 11 | 50,378 | 52,074 |
| Philadelphia | 16,523 | 1,362 | 792 | 261 | 76 | 81 | 6 | 27 | 126 | 1 | 10 | 52,660 | 54,822 |
| Pittsburgh | 12,500 | ........ | 752 | 144 | ........ | ........ | 3 | 14 | 78 | 1 | 3 | 40,362 | 41,868 |
| San Francisco | 8,757 | 354 | 1,640 | 236 | 102 | 22 | 3 | 291 | 690 | 774 | 659 | 43,766 | 44,037 |
| Topeka | 25,770 | ........ | 1,954 | 310 | ........ | ........ | 12 | 250 | 821 | 89 | 161 | 102,828 | 105,975 |
| Washington | 10,585 | 1,492 | 1,647 | 533 | 187 | 108 | 47 | 99 | 372 | 19 | 41 | 50,663 | 52,004 |
| Total | 219,238 | 8,960 | 22,044 | 4,817 | 739 | 290 | 279 | 1,639 | 5,982 | 1,387 | 2,629 | 892,098 | 921,083 |

EXHIBIT 6.—*Number of pensioners in each State and Territory, each insular possession, and each foreign country on the roll June 30, 1911, and the amounts paid therein during the fiscal year 1911.*

| State or Territory. | Number. | Amount. |
|---|---|---|
| Alabama | 3,648 | $596,445.74 |
| Alaska | 83 | 15,466.02 |
| Arizona | 838 | 139,171.26 |
| Arkansas | 10,567 | 1,642,605.59 |
| California | 29,531 | 5,067,136.23 |
| Colorado | 9,138 | 1,619,447.75 |
| Connecticut | 11,201 | 1,872,539.05 |
| Delaware | 2,555 | 454,244.10 |
| District of Columbia | 8,241 | 1,471,994.53 |
| Florida | 4,747 | 815,836.77 |
| Georgia | 3,386 | 543,352.41 |
| Idaho | 2,563 | 438,664.66 |
| Illinois | 61,374 | 10,833,222.56 |
| Indiana | 54,290 | 10,281,779.61 |
| Iowa | 31,402 | 5,698,518.38 |
| Kansas | 34,725 | 6,169,168.06 |
| Kentucky | 23,701 | 4,157,678.90 |
| Louisiana | 6,369 | 1,024,613.60 |
| Maine | 15,894 | 2,946,461.42 |
| Maryland | 12,015 | 2,132,611.17 |
| Massachusetts | 37,301 | 6,271,153.27 |
| Michigan | 37,508 | 6,803,461.80 |
| Minnesota | 15,217 | 2,663,654.03 |
| Mississippi | 4.606 | 724,961.82 |
| Missouri | 44,277 | 7,875,111.93 |
| Montana | 2,438 | 404,917.85 |
| Nebraska | 14,635 | 2,507,084.41 |
| Nevada | 415 | 69,970.12 |
| New Hampshire | 7,102 | 1,324,358.53 |
| New Jersey | 20,978 | 3,490,412.71 |
| New Mexico | 2,134 | 391,671.69 |
| New York | 75,182 | 13,172,308.83 |
| North Carolina | 3,897 | 654,072.49 |
| North Dakota | 1,780 | 333,087.17 |
| Ohio | 86,474 | 15,638,286.83 |
| Oklahoma | 12,318 | 2,179,264.47 |
| Oregon | 8,239 | 1,360,963.81 |
| Pennsylvania | 85,572 | 14,646,640.04 |
| Rhode Island | 5,049 | 849,318.43 |
| South Carolina | 1,924 | 302,562.44 |
| South Dakota | 5,333 | 1,055,579.05 |
| Tennessee | 17,311 | 3,190,810.87 |
| Texas | 9,143 | 1,504,851.68 |
| Utah | 1,110 | 190,883.54 |
| Vermont | 7,214 | 1,413,376.88 |
| Virginia | 8,313 | 1,489,553.80 |
| Washington | 11,005 | 1,821,604.85 |
| West Virginia | 11,388 | 2,044,688.65 |
| Wisconsin | 21,328 | 3,845,894.64 |
| Wyoming | 985 | 165,667.09 |
| Total | 886.444 | 156,307,131.53 |
| INSULAR POSSESSIONS. | | |
| Hawaii | 80 | 14,858.40 |
| Philippines | 60 | 16,629.12 |
| Porto Rico | 36 | 5,820.00 |
| Panama | 2 | 192.00 |
| Total | 178 | 37,499.52 |
| Algeria | 1 | 108.00 |
| Argentina | 16 | 2,852.50 |
| Australia | 103 | 18,364.90 |
| Austria-Hungary | 36 | 6,418.80 |
| Azores | 6 | 1,089.00 |
| Bahamas | 4 | 792.00 |
| Barbados | 2 | 216.00 |
| Belgium | 24 | 4,279.10 |
| Bermuda | 6 | $1,044.00 |
| Bolivia | 1 | 180.00 |
| Brazil | 4 | 698.00 |
| British East Africa | 1 | 144.00 |
| British West Indies | 3 | 298.00 |
| Bulgaria | 1 | 148.40 |
| Canada | 2,712 | 483,539.60 |
| Cape de Verde Islands | 1 | 96.00 |
| Ceylon | 2 | 594.00 |
| Chile | 12 | 2,268.00 |
| China | 18 | 3,209.40 |
| Comoro Islands | 1 | 120.00 |
| Costa Rica | 4 | 517.50 |
| Cuba | 60 | 10,696.80 |
| Danish West Indies | 2 | 324.00 |
| Denmark | 51 | 9,092.30 |
| Dominican Republic | 2 | 241.00 |
| Dutch West Indies | 6 | 948.10 |
| England | 486 | 86,650.80 |
| Egypt | 3 | 330.00 |
| Fiji Islands | 1 | (1) |
| France | 76 | 13,549.67 |
| Germany | 532 | 95,853.33 |
| Greece | 8 | 1,941.41 |
| Guatemala | 3 | 465.00 |
| Haiti | 1 | 108.00 |
| Honduras | 2 | 252.00 |
| Hongkong | 3 | 597.00 |
| India | 17 | 3,031.10 |
| Ireland | 462 | 82,370.60 |
| Isle of Man | 3 | 395.50 |
| Isle of Pines | 2 | 372.00 |
| Italy | 61 | 10,875.30 |
| Jamaica | 7 | 1,876.20 |
| Japan | 34 | 6,060.20 |
| Korea | 1 | 36.00 |
| Liberia | 7 | 912.00 |
| Madeira | 1 | 345.00 |
| Malta | 2 | 324.00 |
| Mexico | 189 | 33,705.70 |
| Netherlands | 10 | 1,668.00 |
| Newfoundland | 4 | 612.00 |
| New Zealand | 16 | 2,847.50 |
| Nicaragua | 2 | 288.00 |
| Norway | 77 | 13,725.10 |
| Panama | 34 | 6,048.90 |
| Paraguay | 1 | 240.00 |
| Peru | 14 | 2,496.10 |
| Portugal | 5 | 828.00 |
| Russia | 18 | 3,197.60 |
| Salvador | 1 | 144.00 |
| Samoa | 1 | 96.00 |
| Scotland | 86 | 15,333.67 |
| Seychelles Islands | 1 | 216.00 |
| Siam | 1 | 144.00 |
| South Africa | 11 | 1,728.00 |
| Spain | 3 | 432.00 |
| St. Helena | 1 | 144.00 |
| Sudan | 1 | 473.57 |
| Sweden | 81 | 14,443.10 |
| Switzerland | 68 | 12,126.40 |
| Tasmania | 2 | 2,332.93 |
| Tonga Islands | 2 | 432.00 |
| Turkey | 20 | 3,565.00 |
| Uruguay | 4 | 909.60 |
| Venezuela | 1 | 144.00 |
| Wales | 31 | 5,526.30 |
| Total | 5,476 | 978,471.98 |

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[1] No payment.

EXHIBIT 6.—*Number of pensioners in each State and Territory, each insular possession, and each foreign country on the roll June 30, 1911, and the amounts paid therein during the fiscal year 1911*—Continued.

SUMMARY.

| | Pensioners. | Payments. |
|---|---|---|
| Pensioners residing in States and Territories and payments to them | 886,444 | $156,307,131.53 |
| Pensioners residing in insular possessions and payments to them | 178 | 37,499.52 |
| Pensioners residing in foreign countries and payments to them | 5,476 | 978,471.98 |
| Total | 892,098 | 157,323,103.03 |
| Payments by Treasury Department (Treasury settlements) | | 2,057.32 |
| Total payments on account of Army and Navy pensions for the fiscal year | | 157,325,160.35 |

EXHIBIT 7.—*Statement showing, by classes, the different monthly rates paid to pensioners under the general pension laws and the number at each rate on roll June 30, 1911.*

| Rate. | Regular establishment. | | Civil War. | | | | | | | War with Spain. | | War of 1812. | War with Mexico. | | Indian wars. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Act of Feb. 6, 1907. | General law. | | | Act June 27, 1890. | | Act of Apr. 19, 1908. | | | | | | | |
| | Invalids. | Widows, etc. | | Invalids. | Nurses. | Widows, etc. | Invalids. | Minors, etc. | Widows. | Invalids. | Widows, etc. | Widows. | Survivors. | Widows. | Survivors. | Widows. |
| $2.00 | 2 | | | | | | | | | | | | | | | |
| 3.00 | 2 | | | | | | | | | | | | | | | |
| 4.00 | 5 | | | | | | | | | | | | | | | |
| 5.00 | 11 | | | | | | | | | | | | | | | |
| 6.00 | 3,837 | | | 567 | | | 1,074 | | | 10,146 | | | | | | |
| 6.25 | | | | | | | | | | 6 | | | | | | |
| 7.00 | | | | 1 | | | | | | | | | | | | |
| 7.50 | 14 | | | 8 | | | | | | 39 | | | | | | |
| 8.00 | 1,960 | | | 479 | | 4 | 1,933 | 38 | | 4,114 | | | | | 1,083 | |
| 8.50 | 1 | | | 9 | | | | | | 40 | | | | | | |
| 9.00 | | | | 5 | | | | | | | | | | | | |
| 9.50 | 1 | | | 1 | | | | | | | | | | | | |
| 10.00 | 1,369 | | | 505 | | | 1,691 | | | 2,622 | | | | | | |
| 10.50 | 3 | | | | | | | | | | | | | | | |
| 11.00 | 3 | | | 2 | | | | | | | | | | | | |
| 11.25 | | | | 15 | | | | | | 24 | | | | | | |
| 11.50 | 2 | | | | | | | | | | | | | | | |
| 11.75 | | | | | | | | | | 1 | | | | | | |
| 12.00 | 1,567 | 3,057 | 177,315 | 10,161 | 310 | 61,562 | 55,288 | 4,820 | 228,198 | 2,207 | 4,658 | 259 | 23 | 5,709 | | 2,540 |
| 12.25 | | | | 6 | | | | | | | | | | | | |
| 12.50 | 8 | | | 9 | | | | | | 10 | | | | | | |
| 12.75 | | | | 43 | | | | | | 44 | | | | | | |
| 13.00 | 4 | | | 37 | | | | | | | | | | | | |
| 13.37½ | | | | 1 | | | | | | | | | | | | |
| 13.50 | 1 | | 1 | 3 | | | | | | 1 | | | | | | |
| 13.68 | 1 | | | | | | | | | | | | | | | |
| 14.00 | 608 | | 3 | 8,333 | | | | | | 759 | | | | | | |
| 14.50 | 1 | | | | | | | | | | | | | | | |
| 14.75 | | | | 2 | | | | | | | | | | | | |
| 15.00 | 42 | 52 | 110,370 | 672 | | 1,194 | 1 | | | 86 | 34 | | 3 | | | |
| 15.25 | | | | 1 | | | | | | | | | | | | |
| 15.50 | 1 | | | 2 | | | | | | 1 | | | | | | |
| 15.54 | 1 | | | | | | | | | | | | | | | |
| 15.68 | 1 | | | | | | | | | | | | | | | |
| 15.75 | | | | 1 | | | | | | 1 | | | | | | |
| 16.00 | 129 | | | 2,489 | | | | | | 37 | | | | | | |
| 16.25 | | | | 1 | | | | | | | | | | | | |
| 16.50 | 2 | | 1 | 4 | | | | | | | | | | | | |
| 16.68 | 1 | | | | | | | | | | | | | | | |
| 16.75 | | | | 3 | | | | | | | | | | | | |
| 17.00 | 1,489 | 116 | | 25,351 | | 1,838 | | | | 1,387 | 60 | | | | | |
| 17.44½ | 1 | | | | | | | | | | | | | | | |
| 17.50 | 13 | | | 6 | | | | | | | | | | | | |
| 17.75 | | | | 1 | | | | | | | | | | | | |
| 17.86 | 1 | | | | | | | | | | | | | | | |
| 18.00 | 18 | | | 208 | | | | | | | | | | | | |

EXHIBIT 7.—*Statement showing, by classes, the different monthly rates paid to pensioners under the general pension laws and the number at each rate on roll June 30, 1911*—Continued.

| Rate. | Regular establishment. | | Civil War. | | | | | | | War with Spain. | | War of 1812. | War with Mexico. | | Indian wars. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Act of Feb. 6, 1907. | General law. | | | Act June 27, 1890. | | Act of Apr. 19, 1908. | | | | | | | |
| | Invalids. | Widows, etc. | | Invalids. | Nurses. | Widows, etc. | Invalids. | Minors, etc. | Widows. | Invalids. | Widows, etc. | Widows. | Survivors. | Widows. | Survivors. | Widows. |
| $18.18 | 1 | | | | | | | | | | | | | | | |
| 18.50 | 2 | | | 2 | | | | | | | | | | | | |
| 18.75 | | | | 18 | | | | | | 7 | | | | | | |
| 19.00 | 2 | | | 2 | | | | | | | | | | | | |
| 19.18 | 2 | | | | | | | | | | | | | | | |
| 19.25 | 1 | | | 2 | | | | | | | | | | | | |
| 19.50 | 1 | | | | | | | | | | | | | | | |
| 19.68 | 1 | | | | | | | | | | | | | | | |
| 19.75 | | | | | | | 1 | | | | | | | | | |
| 19.84½ | 1 | | | | | | | | | | | | | | | |
| 20.00 | 72 | 177 | 69,097 | 2,079 | | 1,754 | | | | 103 | 73 | | 1,398 | | | |
| 20.36 | 1 | | | | | | | | | | | | | | | |
| 20.50 | 6 | | | | | | | | | | | | | | | |
| 20.68 | 3 | | | | | | | | | | | | | | | |
| 21.00 | | | 1 | 1 | | | | | | | | | | | | |
| 21.18 | | | | | | | | | | 1 | | | | | | |
| 21.25 | 13 | | | 2 | | | | | | 1 | | | | | | |
| 21.50 | 1 | | | 1 | | | | | | | | | | | | |
| 21.68 | 1 | | | | | | | | | | | | | | | |
| 22.00 | 53 | | | 1,453 | | | 1 | | | 48 | | | | | | |
| 22.50 | 2 | | 2 | 21 | | | | | | 3 | | | | | | |
| 22.68 | 2 | | | | | | | | | | | | | | | |
| 22.94½ | 2 | | | | | | | | | | | | | | | |
| 23.00 | 2 | | 3 | | | | | | | | | | | | | |
| 23.25 | | | | 2 | | | | | | | | | | | | |
| 23.50 | 1 | | | | | | | | | | | | | | | |
| 23.86 | 1 | | | | | | | | | | | | | | | |
| 24.00 | 805 | | 1 | 23,171 | | | 1 | | | 514 | | | | | | |
| 24.18 | 2 | | | | | | | | | | | | | | | |
| 24.36 | 1 | | | | | | | | | | | | | | | |
| 24.50 | | | | 2 | | | | | | | | | | | | |
| 25.00 | 75 | 135 | 4 | 1,319 | | 400 | | | | 29 | 35 | | | | | |
| 25.25 | | | | 1 | | | | | | | | | | | | |
| 25.50 | 2 | | 2 | | | | | | | | | | | | | |
| 25.69½ | 1 | | | | | | | | | | | | | | | |
| 25.75 | 1 | | | | | | | | | | | | | | | |
| 26.00 | 2 | | 1 | | | | | | | 1 | | | | | | |
| 26.36 | 2 | | | | | | | | | | | | | | | |
| 26.68 | 1 | | | | | | | | | | | | | | | |
| 26.69½ | 1 | | | | | | | | | | | | | | | |
| 26.75 | | | | 1 | | | | | | | | | | | | |
| 27.00 | 27 | | 1 | 713 | | | | | | 15 | | | | | | |
| 27.36 | 2 | | | | | | | | | | | | | | | |
| 27.50 | 6 | | 1 | 2 | | | | | | 1 | | | | | | |
| 28.00 | 2 | | | | | | | | | | | | | | | |
| 28.50 | 1 | | | | | | | | | | | | | | | |
| 28.68 | 1 | | | | | | | | | | | | | | | |
| 29.00 | 1 | | | | | | | | | 1 | | | | | | |
| 29.18 | 2 | | | | | | | | | 1 | | | | | | |
| 29.36 | 2 | | | | | | | | | | | | | | | |
| 29.68 | 1 | | | | | | | | | | | | | | | |
| 30.00 | 709 | 219 | 1 | 11,933 | | 308 | | | | 414 | 23 | | | | | |
| 30.50 | 1 | | 2 | | | | | | | | | | | | | |
| 30.68 | 1 | | | | | | | | | | | | | | | |
| 31.00 | 1 | | | | | | | | | | | | | | | |
| 31.18 | 1 | | | | | | | | | | | | | | | |
| 31.25 | 1 | | | 8 | | | | | | | | | | | | |
| 31.50 | 1 | | | | | | | | | | | | | | | |
| 32.00 | 1 | | 2 | | | | | | | | | | | | | |
| 32.18 | | | | | | | | | | 1 | | | | | | |
| 32.36 | 1 | | | | | | | | | | | | | | | |
| 32.50 | 2 | | 2 | | | | | | | | | | | | | |
| 33.00 | 1 | | 2 | | | | | | | | | | | | | |
| 33.50 | 1 | | | | | | | | | | | | | | | |
| 33.86 | 1 | | | | | | | | | | | | | | | |
| 34.00 | 1 | | 2 | 1 | | | | | | | | | | | | |
| 34.18 | 1 | | | | | | | | | | | | | | | |

**EXHIBIT 7.**—*Statement showing, by classes, the different monthly rates paid to pensioners under the general pension laws and the number at each rate on roll June 30, 1911*—Continued.

| Rate. | Regular establishment. |  | Civil War. |  |  |  |  |  |  | War with Spain. |  | War of 1812. | War with Mexico. |  | Indian wars. |  |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  | Act of Feb. 6, 1907. | General law. |  |  | Act June 27, 1890. |  | Act of Apr. 19, 1908. |  |  |  |  |  |  |  |
|  | Invalids. | Widows, etc. |  | Invalids. | Nurses. | Widows, etc. | Invalids. | Minors, etc. | Widows. | Invalids. | Widows, etc. | Widows. | Survivors. | Widows. | Survivors. | Widows. |
| $34.25 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 34.44½ | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 34.50 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 34.86 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 35.50 | 2 |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 35.68 | 3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 36.00 | 6 |  | 2 | 38 |  |  |  |  |  | 1 |  |  |  |  |  |  |
| 36.18 | 2 |  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| 36.50 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 36.59½ | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 36.64½ | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 36.86 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 37.00 | 2 |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 37.18 |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| 37.19½ | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 37.36 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 37.50 | 3 |  | 3 | 1 |  |  |  |  |  | 1 |  |  |  |  |  |  |
| 37.68 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 37.86 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 38.00 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 38.25 |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 38.36 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 39.00 |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 39.99½ | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 40.00 | 156 |  |  | 2,331 |  |  |  |  |  | 92 |  |  |  |  |  |  |
| 40.50 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 40.54½ | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 40.68 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 40.74½ | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 41.00 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 41.68 | 1 |  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| 41.78 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 42.00 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 42.09½ | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 42.68 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 43.50 | 1 |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 44.00 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 44.04½ | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 44.36 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 44.59 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 45.00 |  |  |  | 3 |  |  |  |  |  |  |  |  |  |  |  |  |
| 45.50 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 46.00 | 83 |  |  | 1,265 |  |  |  |  |  | 61 |  |  |  |  |  |  |
| 46.18 | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 47.00 | 2 |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |  |
| 47.25 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 47.50 |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 48.00 |  |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| 48.50 | 1 |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 48.86 |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| 49.00 |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 49.50 |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 50.00 | 78 |  | 2 | 1,066 |  |  |  |  |  | 62 |  |  |  |  |  |  |
| 50.36 |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |
| 52.00 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 53.64½ | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 54.00 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 55.00 | 36 |  |  | 1,414 |  |  |  |  |  | 32 |  |  |  |  |  |  |
| 55.36 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 57.50 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 58.00 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 59.00 | 1 |  |  | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| 60.00 | 1 |  |  | 2 |  |  |  |  |  |  |  |  |  |  |  |  |
| 61.18 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 62.36 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 62.86 | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 71.64½ | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

EXHIBIT 7.—*Statement showing, by classes, the different monthly rates paid to pensioners under the general pension laws and the number at each rate on roll June 30, 1911*—Continued.

| Rate. | Regular establishment. | | Civil War. | | | | | | | War with Spain. | | War of 1812. | War with Mexico. | | Indian wars. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Act of Feb. 6, 1907. | General law. | | | Act June 27, 1890. | | Act of Apr. 19, 1908. | | | | | | | |
| | Invalids. | Widows, etc. | | Invalids. | Nurses. | Widows, etc. | Invalids. | Minors, etc. | Widows. | Invalids. | Widows, etc. | Widows. | Survivors. | Widows. | Survivors. | Widows. |
| $72.00 | 64 | | | 596 | | | | | | 48 | | | | | | |
| 72.68 | 1 | | | | | | | | | | | | | | | |
| 80.00 | 2 | | | | | | | | | | | | | | | |
| 82.50 | 1 | | | | | | | | | | | | | | | |
| 88.00 | 1 | | | | | | | | | | | | | | | |
| 100.00 | 35 | | | 459 | | | | | | 13 | | | | | | |
| 100.18 | 1 | | | | | | | | | | | | | | | |
| 108.00 | | | | | | | | | | 1 | | | | | | |
| Total | 13,556 | 3,756 | 356,830 | 96,837 | 310 | 67,060 | 59,991 | 4,358 | 228,198 | 22,981 | 4,883 | 259 | 1,424 | 5,709 | 1,083 | 2,540 |

EXHIBIT 8.—*Statement showing, by classes, the different monthly rates paid to pensioners under special acts of Congress and the number at each rate on the roll June 30, 1911.*

| Rate. | Regular establishment. | | General law. | | | War with Spain. | | War of 1812. | War with Mexico. | | Indian wars. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Invalids. | Widows, etc. | Invalids. | Nurses. | Widows, etc. | Invalids. | Widows, etc. | Widows. | Survivors. | Widows. | Survivors. | Widows. |
| $6.00 | 5 | | 6 | | | 12 | 1 | | | | | |
| 8.00 | 11 | | 27 | | 15 | 28 | 1 | | 2 | 1 | 30 | |
| 10.00 | 8 | | 8 | | 2 | 22 | | | | | | |
| 12.00 | 60 | 85 | 364 | 82 | 2,016 | 143 | 120 | 2 | 15 | 244 | 3 | 87 |
| 12.50 | | | | | | 1 | | | | | | |
| 14.00 | 4 | | 22 | | 3 | 5 | | | | | | |
| 15.00 | 3 | 3 | 27 | | 89 | 17 | 4 | | | 1 | 1 | |
| 16.00 | 10 | 1 | 28 | | 206 | 6 | | 2 | 1 | 14 | 268 | |
| 17.00 | 9 | 5 | 90 | | 137 | 20 | 6 | | | | | |
| 17.50 | | | 1 | | | | | | | | | |
| 18.00 | 1 | 4 | 9 | | 44 | 3 | 1 | | | 1 | | |
| 20.00 | 13 | 26 | 589 | 5 | 737 | 35 | 13 | 1 | 171 | 3 | 2 | 1 |
| 22.00 | | 1 | 7 | | | 2 | | | | | | |
| 24.00 | 26 | 1 | 7,974 | 3 | 161 | 34 | 1 | 15 | | | | 1 |
| 25.00 | | 38 | 30 | 6 | 131 | 1 | 26 | | 1 | 1 | | |
| 27.00 | | | 1 | | 1 | | | | | | | |
| 28.00 | 1 | | | | | | | | | | | |
| 30.00 | 22 | 76 | 5,720 | | 197 | 52 | 20 | | 23 | 7 | | |
| 32.00 | | | | | 1 | | | | | | | |
| 33.60 | | | 1 | | | | | | | | | |
| 35.00 | | 30 | 1 | | 12 | | 6 | | | | | |
| 36.00 | 2 | | 495 | | 2 | | | | 1 | | | |
| 40.00 | 6 | 69 | 467 | | 23 | 2 | 11 | | 1 | 1 | | |
| 45.00 | 1 | 1 | 27 | | 1 | | | | | | | |
| 46.00 | 4 | | 17 | | | 3 | | | | | | |
| 50.00 | 11 | 74 | 232 | | 57 | 13 | 13 | | | | | |
| 55.00 | | | 22 | | | 1 | | | | | | |
| 60.00 | 1 | | 10 | | | | | | | | | |
| 65.00 | | | 3 | | | | | | | | | |
| 67.00 | | | 1 | | | | | | | | | |
| 72.00 | 2 | | 28 | | | 1 | | | | | | |
| 75.00 | | 2 | 2 | | 5 | | 1 | | | | | |
| 100.00 | 1 | 5 | 17 | | 7 | 1 | | | | | | |
| 125.00 | | 1 | | | | | | | | | | |
| 166.66⅔ | | | | | 2 | | | | | | | |
| 208.33⅓ | | 1 | | | | | | | | | | |
| 416.66⅔ | | | | | 1 | | | | | | | |
| Total | 201 | 423 | 16,226 | 96 | 3,850 | 402 | 224 | 20 | 215 | 273 | 304 | 89 |

EXHIBIT 9.—*Statement showing the number of pensioners in each class under the general pension laws and "special acts" of Congress, together with the annual value of each on the roll at the close of the fiscal year ended June 30, 1911.*

| Classes. | General laws. | | Special acts. | |
|---|---|---|---|---|
| | Number. | Annual value. | Number. | Annual value. |
| Invalids, regular establishment | 13,556 | $2,243,375.70 | 201 | $51,804.00 |
| Widows, etc., regular establishment | 3,756 | 655,404.00 | 423 | 163,804.00 |
| Invalids, act Feb. 6, 1907 | 356,830 | 61,901,105.00 | | |
| Invalids, general law | 96,837 | 25,823,281.50 | 16,226 | 5,272,327.00 |
| Nurses | 310 | 44,640.00 | 96 | 15,672.00 |
| Widows, etc., general law | 67,060 | 10,163,772.00 | 3,850 | 794,424.00 |
| Invalids, act June 27, 1890 | 59,991 | 8,428,821.00 | | |
| Minors, etc., act June 27, 1890 | 4,358 | 790,056.00 | | |
| Widows, act Apr. 19, 1908 | 228,198 | 33,087,792.00 | | |
| Invalids, War with Spain | 22,981 | 2,761,755.60 | 402 | 87,594.00 |
| Widows, etc., War with Spain | 4,883 | 754,386.00 | 224 | 56,604.00 |
| Widows, 1812 | 259 | 37,296.00 | 20 | 5,232.00 |
| Survivors, War with Mexico | 1,424 | 339,372.00 | 215 | 53,076.00 |
| Widows, War with Mexico | 5,709 | 822,096.00 | 273 | 42,336.00 |
| Survivors, Indian wars | 1,063 | 103,968.00 | 304 | 55,428.00 |
| Widows, Indian wars | 2,540 | 265,760.00 | 89 | 13,056.00 |
| Total | 869,775 | 148,222,880.80 | 22,323 | 6,611,357.00 |

| | |
|---|---|
| Total number of pensioners | 892,098 |
| Total annual value | $154,834,237.80 |
| Average annual value of each pension: | |
| All classes | 173.56 |
| Regular establishment | 173.63 |
| General law, Civil War | 228.58 |
| Act of June 27, 1890 | 143.26 |
| War with Spain | 128.47 |
| Act of Feb. 6, 1907 | 173.47 |
| Survivors, Civil War | 191.41 |
| Act of Apr. 19, 1908 | 144.99 |

EXHIBIT 10.—*Certificates issued during the fiscal year ended June 30, 1911.*

| Classes. | Original. | Increase. | Additional. | Reissue. | Restoration. | Renewal. | Supplemental. | Total. |
|---|---|---|---|---|---|---|---|---|
| General law: | | | | | | | | |
| Army— | | | | | | | | |
| Invalids | 29 | 6,174 | | 3,031 | 15 | 859 | 17 | 10,125 |
| Nurses | 7 | 2 | | 1 | | | | 10 |
| Widows, etc | 771 | 74 | | 227 | 13 | 395 | 18 | 1,498 |
| Navy— | | | | | | | | |
| Invalids | 1 | 35 | | 92 | | 4 | 1 | 133 |
| Widows, etc | 12 | 4 | | 14 | | 3 | 1 | 34 |
| Old wars— | | | | | | | | |
| Invalids | | | | | | 1 | | 1 |
| Widows, etc | 2 | | | | | | | 2 |
| War of 1812—Widows | | 1 | | | | | | 1 |
| War with Spain— | | | | | | | | |
| Army— | | | | | | | | |
| Invalids | 947 | 1,098 | | 44 | 16 | 23 | | 2,128 |
| Widows, etc | 214 | 1 | | 6 | | 8 | 2 | 231 |
| Navy— | | | | | | | | |
| Invalids | 26 | 32 | | 7 | 1 | 2 | | 68 |
| Widows, etc | 12 | | | | | | | 12 |
| Regular establishment— | | | | | | | | |
| Army— | | | | | | | | |
| Invalids | 774 | 674 | | 34 | 2 | 12 | | 1,496 |
| Widows, etc | 229 | 12 | | 4 | 1 | 2 | | 248 |
| Navy— | | | | | | | | |
| Invalids | 414 | 161 | | 21 | 11 | 31 | 1 | 639 |
| Widows, etc | 132 | 7 | | 2 | | | | 141 |
| Act of June 27, 1890: | | | | | | | | |
| Army— | | | | | | | | |
| Invalids | 201 | 213 | 17 | 31 | 51 | 6 | 54 | 573 |
| Minors, etc | 1,041 | 10 | | 27 | 18 | 10 | 68 | 1,174 |
| Navy— | | | | | | | | |
| Invalids | 19 | 16 | | 2 | 3 | | 1 | 41 |
| Minors, etc | 50 | 1 | | | 2 | | 5 | 58 |

EXHIBIT 10.—*Certificates issued during the fiscal year ended June 30, 1911*—Continued.

| Classes. | Original. | Increase. | Additional. | Reissue. | Restoration. | Renewal. | Supplemental. | Total. |
|---|---|---|---|---|---|---|---|---|
| Act of Feb. 6, 1907: | | | | | | | | |
| Army—Civil War | 2,050 | 32,846 | | 18,026 | 49 | 123 | 10 | 53,104 |
| Navy—Civil War | 192 | 1,299 | | 561 | 3 | | | 2,055 |
| Mexican War | 1 | 3 | | 4 | | | | 8 |
| Act of Apr. 19, 1908: | | | | | | | | |
| Army widows | 17,481 | 3 | | 20 | 29 | 11 | | 17,544 |
| Navy widows | 573 | | | | | | | 573 |
| War with Mexico, act 1887, etc.: | | | | | | | | |
| Survivors | 1 | 5 | | | | | | 6 |
| Widows | 205 | 1 | | 1 | 1 | | | 208 |
| Indian wars: | | | | | | | | |
| Survivors | 21 | 95 | | | | | | 116 |
| Widows | 114 | | | | | | | 114 |
| Total | 25,519 | 42,767 | 17 | 22,155 | 215 | 1,490 | 173 | 92,336 |

*Certificates issued each month during fiscal year.*

| Month | Certificates | Month | Certificates |
|---|---|---|---|
| July, 1910 | 6,512 | February, 1911 | 6,871 |
| August, 1910 | 6,511 | March, 1911 | 10,842 |
| September, 1910 | 7,077 | April, 1911 | 8,225 |
| October, 1910 | 9,105 | May, 1911 | 7,458 |
| November, 1910 | 7,744 | June, 1911 | 6,931 |
| December, 1910 | 6,906 | | |
| January, 1911 | 8,154 | Total | 92,336 |

EXHIBIT 11.—*Classification of claims pending June 30, 1911.*

| | | | | |
|---|---|---|---|---|
| Civil War: | | | | |
| General law— | | | | |
| Original invalid | 322 | | | |
| Reissue invalid | 125 | | | |
| Increase invalid | 4,818 | | | |
| | | 5,265 | | |
| Original widows | 1,262 | | | |
| Reissue widows | 199 | | | |
| Increase widows | 37 | | | |
| | | 1,498 | | |
| Original minors | 151 | | | |
| Reissue minors | 29 | | | |
| Increase minors | 12 | | | |
| | | 192 | | |
| Original dependents | | 39 | | |
| | | | 6,994 | |
| Act of June 27, 1890— | | | | |
| Original invalid | 255 | | | |
| Additional invalid | 15 | | | |
| Increase invalid | 1,680 | | | |
| | | 1,950 | | |
| Original widows | 744 | | | |
| Supplemental widows | 3 | | | |
| Original minors | 603 | | | |
| | | 1,350 | | |
| | | | 3,300 | |
| Act of Mar. 3, 1901—Remarried widows | | | 631 | |
| Act of Feb. 6, 1907— | | | | |
| Original | | 1,229 | | |
| Reissue | | 528 | | |
| *Increase* | | 6,099 | | |
| | | | 7,856 | |
| *Act of* Apr. 19, 1908—Original widows | | | 6,372 | |
| | | | | 25,153 |

| | | | |
|---|---|---|---|
| Regular establishment: | | | |
| Original invalid | 2,349 | | |
| Increase invalid | 249 | | |
| | | 2,598 | |
| Original widows | 156 | | |
| Original minors | 0 | | |
| Original dependents | 120 | | |
| | | 276 | |
| | | | 2,874 |
| War with Spain: | | | |
| Original invalid | 6,881 | | |
| Increase invalid | 821 | | |
| | | 7,702 | |
| Original widows | 487 | | |
| Original minors | 32 | | |
| Original dependents | 165 | | |
| | | 684 | |
| | | | 8,386 |
| Mexican War: | | | |
| Survivors (act Jan. 29, 1887) | 5 | | |
| Survivors (act Feb. 6, 1907) | 5 | | |
| | | 10 | |
| Widows (act Jan. 29, 1887) | | 179 | |
| | | | 189 |
| Indian wars (acts July 27, 1892; June 27, 1902; and May 30, 1908): | | | |
| Survivors | | 28 | |
| Widows | | 145 | |
| | | | 173 |
| War of 1812: Original widow | | | 1 |
| Old wars: | | | |
| Original invalid | 2 | | |
| Increase invalid | 9 | | |
| | | 11 | |
| Original widows | | 6 | |
| | | | 17 |
| Total | | | 36,793 |

## *Agencies, dates of payment, and districts.*

### AUGUSTA, ME.

Quarterly payments March 4, June 4, September 4, and December 4.

*District.*—The State of Maine. Navy pensioners in this district are paid at Boston, Mass.

### BOSTON, MASS.

Quarterly payments March 4, June 4, September 4, and December 4.

*District.*—The States of Connecticut, Massachusetts, and Rhode Island, and all Navy pensioners residing in this and the Augusta and Concord districts.

### BUFFALO, N. Y.

Quarterly payments January 4, April 4, July 4, and October 4.

*District.*—The counties in the State of New York not in the New York City district. All Navy pensioners in the State are paid at New York City.

### CHICAGO, ILL.

Quarterly payments January 4, April 4, July 4, and October 4.

*District.*—The State of Illinois, and all Navy pensioners residing in this and the Columbus, Des Moines, Detroit, Indianapolis, Louisville, Milwaukee, and Topeka districts.

### COLUMBUS, OHIO.

Quarterly payments March 4, June 4, September 4, and December 4.

*District.*—The State of Ohio. Navy pensioners in this district are paid at Chicago.

### CONCORD, N. H.

Quarterly payments January 4, April 4, July 4, and October 4.

*District.*—The States of New Hampshire and Vermont. Navy pensioners in this district are paid at Boston.

### DES MOINES, IOWA.

Quarterly payments January 4, April 4, July 4, and October 4.

*District.*—The States of Iowa and Nebraska. Navy pensioners in this district are paid at Chicago.

### DETROIT, MICH.

Quarterly payments March 4, June 4, September 4, and December 4.

*District.*—The State of Michigan. Navy pensioners in this district are paid at Chicago.

### INDIANAPOLIS, IND.

Quarterly payments February 4, May 4, August 4, and November 4.

*District.*—The State of Indiana. Navy pensioners in this district are paid in Chicago.

### KNOXVILLE, TENN.

Quarterly payments February 4, May 4, August 4, and November 4.

*District.*—The States of Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, and Texas. Navy pensioners in this district are paid at Washington, D. C.

### LOUISVILLE, KY.

Quarterly payments February 4, May 4, August 4, and November 4.

*District.*—The State of Kentucky. Navy pensioners in this district are paid at Chicago.

### MILWAUKEE, WIS.

Quarterly payments January 4, April 4, July 4, and October 4.

*District.*—The States of Minnesota, North Dakota, South Dakota, and Wisconsin. Navy pensioners in this district are paid at Chicago.

### NEW YORK CITY, N. Y.

Quarterly payments February 4, May 4, August 4, and November 4.

*District.*—The following counties in the State of New York: Albany, Clinton, Columbia, Delaware, Dutchess, Essex, Greene, Kings, Nassau, New York, Orange, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Suffolk, Sullivan, Ulster, Warren, Washington, and Westchester. The following counties in the State of New Jersey: Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Passaic, Somerset, Sussex, Union, and Warren; all Navy pensioners in the State of New York, and all pensioners residing in the island of Porto Rico.

### PHILADELPHIA, PA.

Quarterly payments February 4, May 4, August 4, and November 4.

*District.*—The following counties in the State of Pennsylvania: Berks, Bradford, Bucks, Carbon, Chester, Columbia, Dauphin, Delaware, Lackawanna, Lancaster, Lebanon, Lehigh, Luzerne, Monroe, Montgomery, Montour, Northampton, Northumberland, Philadelphia, Pike, Schuylkill, Sullivan, Susquehanna, Wayne, Wyoming, and York. The following counties in the State of New Jersey: Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Mercer, Ocean, and Salem, and all Navy pensioners in the State of Pennsylvania.

### PITTSBURGH, PA.

Quarterly payments January 4, April 4, July 4, and October 4.

*District.*—The counties in the State of Pennsylvania not in the Philadelphia district. All Navy pensioners in the State are paid at Philadelphia.

### SAN FRANCISCO, CAL.

Quarterly payments March 4, June 4, September 4, and December 4.

*District.*—The States of California, Idaho, Montana, Nevada, Oregon, Utah, Washington, and Wyoming; the Territories of Alaska, Arizona, and Hawaii; the Philippines, Guam, and the Samoan Islands belonging to the United States; including all Navy pensioners.

### TOPEKA, KANS.

Quarterly payments February 4, May 4, August 4, and November 4.

*District.*—The States of Colorado, Kansas, Missouri, and Oklahoma, and the Territory of New Mexico. Navy pensioners in this district are paid at Chicago.

### WASHINGTON, D. C.

Quarterly payments March 4, June 4, September 4, and December 4.

*District.*—The States of Delaware, Maryland, Virginia, and West Virginia; the District of Columbia; all pensioners residing in foreign countries, and all Navy pensioners residing in this and the Knoxville districts.

# REPORT OF THE COMMISSIONER OF PATENTS.

# REPORT OF THE COMMISSIONER OF PATENTS.

Department of the Interior,
United States Patent Office,
*Washington, D. C., October 20, 1911.*

Sir: I have the honor to submit herewith the following report of the business of the United States Patent Office for the fiscal year ended June 30, 1911:

*Applications received during fiscal year ended June 30, 1911.*

| | |
|---|---|
| Applications for patents for inventions | 65,154 |
| Applications for patents for designs | 1,315 |
| Applications for reissues of patents | 206 |
| Applications for registration of trade-marks | 6,857 |
| Applications for registration of labels | 879 |
| Applications for registration of prints | 266 |
| Total applications | 74,677 |
| Disclaimers | 8 |
| Appeals on the merits | 1,698 |
| Total applications, disclaimers, and appeals | 76,383 |

*Applications awaiting action.*

| | |
|---|---|
| Applications awaiting action on the part of the office July 1, 1911 | 17,809 |

*Applications for patents, including reissues, designs, trade-marks, labels, and prints.*

| Year ended June 30: | | Year ended June 30—Continued. | |
|---|---|---|---|
| 1902 | 51,258 | 1907 | 66,795 |
| 1903 | 54,256 | 1908 | 68,441 |
| 1904 | 55,468 | 1909 | 73,026 |
| 1905 | 66,228 | 1910 | 72,533 |
| 1906 | 68,881 | 1911 | 74,677 |

*Applications awaiting action on the part of the office.*

| Year ended June 30: | | Year ended June 30—Continued. | |
|---|---|---|---|
| 1902 | 11,042 | 1907 | 13,634 |
| 1903 | 9,842 | 1908 | 20,043 |
| 1904 | 13,069 | 1909 | 17,153 |
| 1905 | 16,077 | 1910 | 14,575 |
| 1906 | 21,958 | 1911 | 17,809 |

*Patents withheld and patents expired.*

| | |
|---|---|
| Letters patent withheld for nonpayment of final fees | 7,098 |
| Letters patent expired | 22,546 |
| Applications allowed, awaiting payment of final fees | 12,925 |

*Patents granted and trade-marks, labels, and prints registered.*

| Class. | 1907 | 1908 | 1909 | 1910 | 1911 |
|---|---|---|---|---|---|
| Letters patent | 33,644 | 34,003 | 34,332 | 36,287 | 33,513 |
| Design patents | 529 | 748 | 721 | 629 | 777 |
| Reissue patents | 165 | 151 | 162 | 142 | 138 |
| Trade-marks | 8,798 | 6,135 | 4,547 | 4,342 | 3,791 |
| Labels | 660 | 636 | 779 | 176 | 576 |
| Prints | 325 | 279 | 231 | 59 | 181 |
| Total | 44,121 | 41,952 | 40,772 | 41,635 | 38,976 |

*Expenditures.*

|  | Expended. | Estimated liabilities. | Total. |
|---|---|---|---|
| Salaries | $1,278,840.55 |  | $1,278,840.55 |
| Scientific library | 1,270.08 | $1,114.17 | 2,384.25 |
| Postage on foreign matter | 970.00 |  | 970.00 |
| Stationery | 10,421.55 |  | 10,421.55 |
| Ice | 317.34 |  | 317.34 |
| Telephones | 955.99 |  | 955.99 |
| Washing towels | 157.36 |  | 157.36 |
| Furniture, carpets, linoleum, matting, and sundries | 15,649.88 |  | 15,649.88 |
| Law library | 416.61 | 13.15 | 429.76 |
| Public use | 25.56 |  | 25.56 |
| Photolithographing, paid contractor | 114,425.92 |  | 114,425.92 |
| Photographic printing, paid contractor | 9,009.90 |  | 9,009.90 |
| Printing old specifications, paid Public Printer | 16,564.17 |  | 16,564.17 |
| Printing and binding: |  |  |  |
| Official Gazette and indexes | 130,100.39 | 18,222.44 | 148,322.83 |
| Specifications | 338,859.80 |  | 338,859.80 |
| Miscellaneous | 19,049.38 |  | 19,049.38 |
| International Convention for Protection of Industrial Property | 617.61 |  | 617.61 |
| Total | 1,937,652.09 | 19,349.76 | 1,957,001.85 |

*Receipts and expenditures.*

|  |  |
|---|---|
| Receipts from all sources | $1,987,778.58 |
| Expenditures (including total in all appropriations) | 1,957,001.85 |
| Surplus | 30,776.73 |

*Comparative statement of receipts and expenditures, 1901 to 1910.*

| Year ended June 30— | Receipts. | Expenditures. |
|---|---|---|
| 1902 | $1,491,538.85 | $1,329,924.63 |
| 1903 | 1,591,251.04 | 1,423,094.40 |
| 1904 | 1,663,879.99 | 1,469,124.40 |
| 1905 | 1,737,334.44 | 1,472,467.51 |
| 1906 | 1,811,297.84 | 1,538,149.40 |
| 1907 | 1,859,592.89 | 1,584,489.70 |
| 1908 | 1,874,180.75 | 1,608,292.01 |
| 1909 | 1,975,919.97 | 1,887,443.35 |
| 1910 | 2,022,043.26 | 1,953,549.76 |
| 1911 | 1,987,778.58 | 1,957,001.85 |

As specified in the foregoing statement, there were received in the last fiscal year 65,154 applications for mechanical patents, 1,315 applications for designs, 206 applications for reissues, 6,857 applications for trade-marks, 879 applications for labels, and 266 applications for prints. There were 34,428 patents granted, including reissues and designs, and 3,791 trade-marks, 576 labels, and 181 prints were registered.

The number of patents that expired was 22,546. The number of allowed applications which were by operation of law forfeited for non-payment of the final fees was 7,098. The total receipts of the office were $1,987,778.58; the total expenditures were $1,957,001.85, and the net surplus of receipts over expenditures was $30,776.73. The total net surplus for all years of receipts over expenditures of all kinds (including salaries of the force) is now $7,029,004.37. This surplus covered into the Treasury represents the net earnings of the bureau, and it has all been paid by the inventors.

## CONDITION OF WORK.

The work of this bureau is at present in a very satisfactory condition and practically up to date in all its branches. Of course, the work naturally falls into arrears during the period of the year from July 1 to October 1, which is the time when the force is taking its annual leaves of absence, but it is always brought up to date by December 31 each year, and continues so until the next vacation period comes around.

Congress has been fairly liberal in its appropriations for the Patent Office by increasing its force and salaries and providing new positions, and I have thus been able to bring about, during my incumbency of the office of commissioner, many needed reforms. I think I may safely say that the bureau is in better condition than ever before as regards the transaction of business and the salaries paid employees.

I wish to state here that I do not believe there is anywhere in the Government service a more competent, intelligent, hard working, or efficient class of employees than can be found in the Patent Office. The examining corps to-day is made up entirely of men who have been graduated from various technical colleges and schools, and they possess a very thorough foundation of knowledge when they enter the office through the competitive examinations. With but a few exceptions, they all take courses at some of the law colleges of Washington which provide night sessions, with the result that in about four years of service they become graduates and are admitted as members of the bar, both in general and in patent law.

I regret to say, however, that although the salaries have been materially increased in the past three years, I have been unable to hold as great a percentage of this specially trained class of men as is desirable to obtain the best possible aggregate efficiency. There is still a certain percentage that separates from the service after a comparatively short period—generally when they have become most valuable. This is on account of the low salaries as compared with the inducements offered by the large corporations and established law firms.

I have not, however, asked that the salaries of the examining corps be again raised at this time.

## GAINS IN EFFICIENCY AND ECONOMY.

I am glad to state that changes are constantly being made looking to greater efficiency and economy in the service, and a great deal of good along these lines has been accomplished during the past three years.

Within the fiscal year just ended a change has been made in the manner of printing certificates of trade-mark registration which has resulted in the saving of between five and six thousand dollars annually. This will be a continuous annual saving.

Plans are now under way to accomplish an economy in the method of publishing and issuing the Official Gazette. At this time I am able to say that a saving of between eighty and ninety thousand dollars a year will be made possible, and these contemplated changes will not detract from the efficiency of that publication as a work of reference, but will rather add to it in that respect. It will not be so bulky, and in its more compact form will be appreciated by those who must economize in shelf space, which is quite important. especially to those in large cities where rents are high.

Certain changes have been formulated in the rules of practice relating to the registration of trade-marks which, when they become effective, will accomplish a considerable saving of time to examiners in searching this enormous class of applications. At the present time it is required that the examiners search through some 20,000 pending applications, which are in various stages of prosecution. It is proposed to have the same rules apply to applications for the registration of trade-marks as now apply to applications for patents; that is, they must be amended within one year or the application becomes abandoned. This will not cause forfeiture or undue hardship, because applicants will still have the right to file new applications if deemed desirable.

## LEGISLATION.

From time to time I have made recommendations to the Congress which were put into the forms of bills and referred to the Committees on Patents, which if enacted into laws would very materially relieve conditions in various directions in the Patent Office, and also result in a great saving of time and money to inventors as well as reducing the expenses of the office.

One important bill has as its object the elimination of one of the appeals within this office. Under the present law appeals lie in ex parte cases from the primary examiners to the board of examiners in chief, thence to the commissioner (the first assistant commissioner, or the assistant commissioner), and from his decision to the Court of Appeals of the District of Columbia, and in interference cases the course of appeals from decisions of the examiner of interferences is the same, there being three appeals in each case.

The purpose of the proposed amendment to the statute is to shorten the course of prosecution by the elimination of one of the appeals within the office. This is designed to be accomplished by combining the commissioner, first assistant commissioner, assistant commissioner, and examiners in chief into a single appellate tribunal, any three of whom shall constitute a quorum, to which all appeals shall lie, whether from a primary examiner or from the examiner of interferences, and from which appeals would lie to the Court of Appeals of the District of Columbia.

The present course of appeals is not well adapted to the volume of business which the office is now called upon to handle, for the following reasons:

It imposes on applicants an unnecessary amount of delay and expense. The very purpose of the patent system is to place at the service of the public at as early a date as practicable inventions as they are made, and unnecessary delays affect not only applicants but all interested in the industries to which the inventions relate. One appeal within the office, together with the appeal to the Court of Appeals of the District of Columbia, would seem to be ample, especially in view of the fact that in a suit on a patent a single appeal takes the case from the trial court to the court of appeals. The elimination of one appeal would materially shorten the time required for the ultimate disposal of appealed cases and effect a considerable saving of expense to applicants.

Section 4910 provides for an appeal to the commissioner in person from the board of examiners in chief. The work of the office and the consequent number of appeals have increased to such an extent that it has become difficult, and will soon be impossible, for the commissioner to give to each case the amount of personal attention proper to its disposal.

The board of examiners in chief as at present constituted consists of three members, and no provision is made under the present law to supply a temporary vacancy caused by the sickness or absence from other cause of any of the members. The absence of one member often results in an evenly divided board, with the consequent necessity for a rehearing, and the absence of two members causes an entire suspension of business. With the proposed appellate board the presence of a quorum of three would be practically assured at all times, which has not been the case in numerous instances in the past, owing to frequent absences of a member of the board on account of periods of illness of greater or less duration and also by reason of annual leave and other causes. The work of this tribunal has so greatly increased during the last few years that it is almost impossible for its members to give the thorough joint consideration to each case which it deserves.

The existing trade-mark law provides for appeals from the examiner of trade-marks and from the examiner of interferences in trade-mark cases directly to the commissioner (first assistant, or assistant commissioner). From these tribunals appeal lies to the Court of Appeals of the District of Columbia, as in patent cases. The amendment submitted merely substitutes the proposed board of appeals for the commissioner as the appellate tribunal of the office in cases relating to trade-marks, making the course of appeals in this class of cases conform to the course of appeals recommended above in cases involving applications for patents.

These changes in the course of appeals would not only have the effect of expediting the prosecution of applications on appeal, but the elimination of an appeal would be a saving to the inventors of one appeal fee, the attorneys' fees, and other expenses incident thereto. Furthermore, having but one appeal within the office in lieu of two would result in giving greater stability to the decisions of the office tribunals, and would also obviate any want of comity that has at times existed in the past between the decisions of the Commissioner of Patents and the assistant commissioner. These proposed changes in the law in no wise affect the present legal status of the Commissioner of Patents, the first assistant commissioner, the assistant commissioner, or the examiners in chief.

Bills embracing the substance of this recommendation were introduced by Senator Smoot and were passed by the Senate. No action, however, was taken upon these bills in the House. I most earnestly recommend that the attention of Congress be again directed to this matter and that the passage of such bills be urged, in view of the following facts:

It is the practically unanimous opinion of inventors and manufacturers throughout the country that one appeal should be eliminated in the Patent Office in order to save the great cost and loss of time now involved in obtaining a final adjudication and consequent grant of patent.

That no general protest has been lodged and no effective arguments have been made against the passage of the bill.

Scientific journals have favorably commented upon this measure by editorials and otherwise and offered no protest or objection.

That a great amount of time and labor would be saved to the tribunals of the Patent Office. Under the present system the work is done twice to no good effect.

This is an important part of the plan to expedite business and to grant patents to inventors within a reasonable time, which they have demanded and to which they are entitled.

I desire also to recommend the passage of certain bills introduced in Congress and referred to in my report to Congress dated December

31, 1908. In my report I pointed out the importance and necessity for these proposed amendments to the patent laws. The most important deals with the safeguarding of applications from possible mutilation or fraudulent amendment during their pendency in the Patent Office, and with increasing the certainty of examinations of applications. The others comprise merely verbal changes in sections 4917 and 4893 of the Revised Statutes, in the interest of accuracy and clearness.

The first provides for the amendment of section 4889 of the Revised Statutes. Certain changes in phraseology of the statutes are provided by the bill; but the really essential provision is that there shall be required to be filed with an application for patent, in addition to the drawing, two photographic copies of such drawing. This imposes upon every applicant for patent an additional statutory requirement, to wit, to file with each application of which a signed and attested drawing forms part two photographic copies of such signed and attested drawing.

The purposes of this requirement are (1) to guard against and enable the detection of unauthorized changes in the original drawing or abstraction of such drawing and substitution of another; (2) to lessen the danger of serious mistakes on the part of the office in failing to detect interferences between copending applications for the same invention.

It is proposed to accomplish the first purpose by causing to be filed in secret archives, in charge of the chief draftsmen, one of these photographic copies, which may serve as a permanent standard of comparison with the pen-and-ink drawing from which the copies that form a part of the patent are taken. At present the drawing may be sent to the attorney's room upon request of any one appearing of record as having an interest in the application, or it may be changed or abstracted and replaced by any corrupt employee of the Patent Office, leaving no evidence, or at best negative indications, that any unauthorized changes have been made. An illuminative example of what unauthorized changes may be made is found in the case of the Heany patent, No. 872,936, where no drawing was filed originally with the application, but one was filed subsequently, which was later abstracted and replaced by another of entirely different character, the last drawing being the one which now forms a part of the patent. If at the time the Heany application was filed all applicants had been required to file a photographic reproduction of the drawing, the changes could hardly have been made without detection, except by the collusion of two or more persons, and with great difficulty.

It is proposed to accomplish the second purpose by retaining the second photographic copy of the drawing in the file wrapper and sending it with the file to the attorneys' room, upon order, or to any other division or any tribunal of the Patent Office, when required, leaving the original drawing in the examining division, where the application is classified for examination; or, if for any reason it should become necessary to send the original drawing out of the examining division, the photographic copy could be retained therein, where it would be discovered in interference searches. Under the present procedure, both drawing and file wrapper are sent out of the division on attorneys' orders, also when they are placed in interference or are appealed; and the drawing is frequently sent out on orders of the official draftsman or the chief of the copy and manuscript division for extended periods, amounting in interference proceedings to years. While the drawing is out of the examining division interferences between the application of which it forms a part and other subsequently filed applications may be overlooked, as the interference search is made by means of the drawing. The memory of the examiner can not always be relied upon to recall interfering applications, especially as the personnel of the force changes continually.

The size of the sheets upon which the proposed photographic copies shall be made, their character and disposition, may be left to the discretion of the Commissioner of Patents, who may prescribe, subject to the approval of the Secretary of the Interior, all proper requirements by rule under the authority of section 483 of the Revised Statutes.

It is very clear that it is desirable for applicants filing applications for patent to accompany the same with photographic copies of the drawings. This has been the opinion of my predecessors in office. Commissioner Butterworth issued an order to this effect, but subsequently revoked it because he was convinced that he could not legally enforce that order without statutory authority. The recent developments in the Patent Office in regard to the tampering with patent records make it essential that the statute be amended as requested, so as to give statutory authority to the requirement for the photographic copies. It may be said, however, that this is the first time that the records of the Patent Office have been tampered with during its history, covering a period of 121 years, and it is the only patent so tampered with in more than 1,000,000 patents which have been granted by the United States to date.

The other two bills provide for slight amendments to sections 4893 and 4917, Revised Statutes, to which they apply, respectively. These amendments change only the word "claimant" in section 4893 to read "applicant," and the word "claimant" in section 4917 to read "patentee."

The word "claimant" is not, in my opinion, the proper word to use in these statutes. In all other statutes relating to patents the inventor is formally referred to as an "applicant" or as a "patentee." These two statutes are the only ones using the word "claimant." These amendments, therefore, will bring these statutes into conformity with the other statutes relating to patents.

The application for a patent is not a claim against the Government, and the attorney in a patent case is not prosecuting a claim against the Government. The patent, on the contrary, is in the nature of a contract and is so construed by the authorities on the subject and by the courts. The inventor having created something new, offers by his application to fully disclose his invention at once and to give it to the public at the end of 17 years, provided the United States will allow him to have the exclusive possession thereof in the meantime. In granting a patent for an invention the Government is not parting with anything possessed by the public prior to applicant's disclosure. If the inventor chooses not to disclose his invention, but to practice it in secret, the public is the loser. In payment for the invention the inventor obtains the right to bring suit in the Federal courts against infringers during a period of 17 years.

I also respectfully recommend the passage of the bill prepared by me and introduced and referred to the Patent Committee of each House of Congress in the Sixty-first Congress, and reintroduced by Mr. Oldfield, chairman of the Patent Committee, requiring that an application for patent shall be prosecuted within six months after any action by the Patent Office. The present period within which the applicant is allowed to amend is one year, and under the existing practice there have been many instances of cases being amended just within the one-year limit, in order to keep them alive, they thus serving as dragnets in many cases to catch inventions along similar lines which may be subsequently applied for, thereby involving inventors in expensive interference proceedings. It has been the effort of the office to get the old cases out of the office whenever possible consistent with good work. The office has been severely criticized recently, especially in the last year or two, for allowing applications, particularly those owned by corporations, to rest in the office for such long periods as to really have the effect of extending the patent period in case such applications are later passed to issue. Instructions have been repeatedly given to the examining corps to, as far as possible, get rid of all such cases as are delayed apparently by the applicant or his attorney. Had this bill passed it would have almost entirely overcome that criticism.

Full hearings were given on all these bills by the Patent Committees of the Sixtieth and Sixty-first Congresses and these bills were prepared by the office and their passage strongly urged for fully three years by the present administration of the office. The bill for shortening the period during which amendments may be filed and the bill eliminating the appeal within the Patent Office were strongly opposed before the Patent Committee by certain members of the patent bar of Washington and a few attorneys not members of that association. Despite this opposition, however, the bills were favorably reported by the committees, but were not reached on the calendar. These bills have since been reintroduced by the chairman of the House Committee on Patents, Representative Oldfield, of Arkansas, who was a minority member of the former Patent Committee, and it is hoped that these measures will all be enacted into laws at the coming session of Congress. I trust you will see your way clear to lend your favorable support to this desired result.

These bills, which are now pending in the Committee on Patents of the House, are H. R. 7609, providing for the elimination of one of the appeals within the Patent Office; H. R. 7711, requiring the filing of photographic copies of drawings accompanying applications for patents; H. R. 7710, authorizing the commissioner to issue certificates of correction; and H. R. 8388, requiring that applications shall be completed and prepared for examination within six months after the filing of the application.

In connection with the bill for the elimination of one of the appeals within the office, and to illustrate the heavy appeal docket, the following table is furnished:

*Appeals, fiscal year 1911.*

| | | |
|---|---|---|
| Number of interferences declared during the year | | 1,537 |
| Decisions of the examiner of interferences on priority in interference cases | | 298 |
| Appeals to examiners in chief in interference cases | 171 | |
| Ex parte appeals to examiners in chief | 931 | |
| | | 1,102 |
| Appeals to commissioner in interference cases | 151 | |
| Appeals to commissioner in opposition cases | 21 | |
| Appeals to commissioner in cancellation cases | 6 | |
| Ex parte appeals to commissioner | 168 | |
| Interlocutory appeals to commissioner | 225 | |
| Ex parte appeals in trade-mark cases | 79 | |
| | | 650 |
| Petitions to commissioner | | 2,262 |
| | | 2,912 |
| Appeals to Court of Appeals, District of Columbia: | | |
| Ex parte cases | | 21 |
| Interference cases | | 37 |
| Opposition cases | | 6 |
| Cancellation cases | | 1 |
| | | 65 |

## THE CASE OF EVERDING, BARTON, AND HEANY.

In the fall of 1907 my suspicions were aroused as to probable irregularities in Patent No. 872936, and also as to several applications for patent pending in the name of John Allen Heany, of York, Pa., for improvements in tungsten lamps.

I personally conducted for some three weeks the investigation as to these matters. I appointed a board consisting of Examiner-in-Chief Frank C. Skinner, Examiner-in-Chief Levin H. Campbell, and Examiner of Classification Eugene D. Sewall, the sessions being held and all the witnesses examined in my private office.

These inquiries resulted in placing the evidence in the hands of the United States district attorney for the District of Columbia, and the same were by him presented to the grand jury, who, at the January term, 1908, returned indictments against Henry E. Everding, a patent attorney of Philadelphia, Ned W. Barton, an assistant examiner in the Patent Office, and John Allen Heany, inventor, of York, Pa., for forgery and violation of sections 5403 and 5440 of the Revised Statutes, based upon the destruction of certain papers forming parts of original applications for patents filed in the Patent Office by said Heany and the substitution therefor of forged and fraudulent papers. The case came on for trial in the fall of 1908. Barton pleaded guilty and was immediately sentenced to the penitentiary. Everding and Heany stood trial, with the result that in a verdict rendered by the jury December 24, 1908, Everding was convicted and Heany acquitted. Both Everding and Barton served their terms in the penitentiary. The Government was represented at the trial of the criminal case by United States Attorney D. W. Baker, assisted by Jesse C. Adkins and then Principal Examiner F. C. Skinner, the latter two being appointed by the Attorney General at my request to represent the Patent Office.

After the termination of the criminal trial, I then issued an order against John Allen Heany, the alleged inventor, to show cause why certain interferences in which his applications were involved should not be dissolved and his applications included therein and also certain other applications also tainted with fraud should not be stricken from the files and treated as a nullity.

At that time being under appointment by the President as expert attaché to the United States delegation to the Fourth International Conference of American States at Buenos Aires, 1910, and also subsequently and during the period of these later hearings occupying the position, by appointment of the President, as chairman of the American delegation to the conference of Washington of the International Union for the Protection of Industrial Property, which conference was wholly placed in my charge by the Secretary of State, and as my whole time was occupied with these and other important duties, I assigned the further investigation and the hearings and determination of the questions which would result from my order to Heany to show cause to First Assistant Commissioner Cornelius C. Billings.

This investigation was begun in the summer of 1910 and was carried on for a period of several months, and a great many witnesses were examined. During these hearings the Government was represented by Mr. Jesse C. Adkins, who was continued specially in the case at my request by the Attorney General, and also by Mr. Webster S. Ruckman, chief law clerk of the Patent Office.

The investigation was very thorough and complete, and the conclusions arrived at by Mr. Billings are set forth in a very able decision, which will be found published in the Official Patent Office Gazette of the issue of October 24, 1911. The interferences in which the said Heany applications were involved were dissolved and patents to Heany were refused on the ground of fraud.

The conclusions reached by Mr. Billings and expressed in his decision meet my full and unqualified approval, and I wish also to express my appreciation of the very valuable assistance rendered by Messrs. Skinner, Campbell, and Sewall in detecting and bringing to the surface the very craftily disguised fraudulent sheets and inserted matter in these cases.

I also wish to certify in this report to the very able assistance given by Messrs. Adkins and Ruckman to Mr. Billings in the further investigation and decision reached in the subsequent case noted.

The department and the Patent Office are to be congratulated at the very satisfactory termination of the criminal case and the office investigations as well. As I stated in my previous report, and also to the press, that this is the only case of its kind that has ever occurred in the Patent Office during the 117 years of its history, a very wonderful record for a bureau, especially in view of the fact that there are so many possible temptations by reason of the great interests passed upon therein.

## THE PATENT BAR.

I desire also to be permitted to invite your attention to the necessity for legislation which would result in the establishment of a patent bar. It is strongly urged that a law be enacted which will provide that before an individual shall be permitted to practice before the United States Patent Office he be required to pass an examination as to his moral, legal, and technical qualifications; that a committee be appointed by the Commissioner of Patents, composed of officials in the Patent Office and patent attorneys of well-known standing in the profession, who shall conduct the examination under the commissioner's supervision, the report of such committee to be subject to his approval.

Authority should be given by such legislation to an appropriate committee to regulate the advertising by attorneys practicing before the Patent Office, and also from time to time to pass upon all complaints of improper advertising and other matters which are considered outside of professional ethics. Such a bill was drafted and submitted to your predecessor, but apparently overlooked and was not forwarded to Congress. A redraft will be prepared and presented for your approval in a short time.

## CHANGES IN THE TRADE-MARK LAW AND REORGANIZATION OF THE TRADE-MARK DIVISION.

A slight amendment was submitted by me to the trade-mark law of 1905, passed by Congress, and approved during the final session of the Sixty-first Congress. This change permits the registration of a technical trade-mark, although it forms a part of the name of the applicant.

Looking to the reorganization of the Trade-Mark Division, I recommended to Congress in my last report that a competent force of assistant examiners of trade-marks be provided. Appropriation was made for six examiners of trade-marks and designs at $1,500 each, striking out four of the higher grades, which I trust will be restored at the next session of the Sixty-second Congress. I have made recommendation therefor.

## SCIENTIFIC LIBRARY.

I have also in mind the thorough reorganization of the scientific library in this bureau. That branch is of very great importance to inventors and the office, the number of volumes having reached between 40,000 and 50,000, all scientific works, which are constantly searched by interested people and the examining corps in the conduct of their work of examining applications for patents. It is my desire to thoroughly digest that whole subject matter, so that it will be readily accessible and will be a saving of much time and expense.

I deem it quite necessary that an additional translator should be provided, as the present translator is compelled to do much translating for the various bureaus of this department, and in view of the great number of patents that are received in the scientific library from all parts of the world, and as all governments exchange patents, it is quite necessary that competent translators should be provided who are familiar with five or six languages at least. The present translator is familiar with 10 languages and has a working knowledge of half a dozen in addition.

Of course the number of foreign publications and patents increase each year, as a great many nations other than the larger countries, who have had patent systems for many years, are inaugurating them, and we are now receiving patents printed in many languages. It is highly important that assistant translators be provided who can translate these numerous languages in order that the patents may be at once classified and sent to the various examining divisions to be used as references in the examination of applications for patents. Translations are made for inventors and others, and the office receipts therefor would pay the salaries of this force.

An addition of five assistant examiners has been asked of Congress to assist the librarian in speedily digesting the library material. It is quite necessary that we should have men who possess technical qualifications and knowledge to some degree of languages, as many of the works are in foreign tongues.

Since Congress allowed me a force for the purpose of bringing up the work of classification of United States patents, the extent of the work accomplished has been the classification of about half of the more than 1,000,000 United States patents. The very slight increase requested for the library will be sufficient to begin the classification of foreign patents and scientific works as above indicated. When this work is finished there will be an immense saving of time and money in the work of examining patents, and the patents when issued will have been more thoroughly searched and will of course have a greater degree of validity attached to them, which is a condition very desirable to be brought about in order to materially reduce the expenses of possible litigation to the patentee after the patent issues. It will not be necessary to so constantly apply to Congress for increases to the force of high-salaried examiners, as the field of search will be enormously lessened.

## INTERNATIONAL CONFERENCES AND TREATIES.

The Fourth International Conference of American States was held in Buenos Aires in the summer of 1910. The United States delegation to this conference consisted of ex-Ambassador Henry White; Judge Advocate Gen. Enoch H. Crowder; Prof. John Bassett Moore, of Columbia University, New York; Lewis Nixon, Esq.; Prof. Bernard Moses, of the University of California; Lamar C. Quintero, Esq.; Prof. Paul H. Reinsch, University of Wisconsin; and Prof. David Kinley, of the University of Illinois, and to which I had the honor to be appointed by the President as expert attaché.

Two conventions relating to patents and trade-marks and one relating to copyrights were prepared by me, and after thorough and protracted discussions by the committees and the conference they were finally adopted. These three conventions have all been approved by the United States Senate and ratified and are now awaiting ratification by the 20 Latin-American nations, several of whom I am informed have ratified them, and the others have the conventions still under consideration.

The register of copyrights, Mr. Solberg, and the Librarian of Congress, Mr. Putnam, pronounced the convention relating to copyrights one of the best ever formulated, and it is expected to be of great benefit to all the signatory countries when ratified.

The conventions relating to patents and trade-marks were made to harmonize with the provisions of the International Convention of Paris of 1883, and the subsequent amendments thereto, and also to the laws of the United States, so that when these shall have been ratified the nations of the world will be in harmony as to these subjects. These conventions are of the greatest benefit to and are strictly in the interest of the manufacturers, inventors, and authors of the United States.

## THE CONFERENCE AT WASHINGTON.

The International Union for the Protection of Industrial Property met in conference at Washington May 15, 1911, and held daily sessions until June 2, 1911. This union was first organized in Paris in 1883, under what is known as the Convention of Paris, which provided, among other things, for the establishment of an international bureau to be located at Berne, Switzerland. The bureau is a clearing house for patents and trade-marks and matters pertaining to them, in which are interested all the nations which adhered to the original convention. At the present time there are 25 adhering nations, each nation contributing to the support of the bureau.

At the congress of Brussels in 1897, an invitation was extended by President McKinley to the union to hold its next conference at Washington, the date to be fixed later. The conference of Brussels accepted the invitation, subject to the approval of the respective governments, which was subsequently obtained, and the date fixed for May, 1910. Owing to the inability, however, of some of the nations to prepare for a conference at that time, the date was eventually set forward one year. For the expenses of entertainment of this important conference Congress made two appropriations of $10,000 each, and the President appointed as delegates on behalf of the United States Edward B. Moore, Commissioner of Patents, chairman; Frederick P. Fish, of Boston; Robert H. Parkinson, of Chicago; Melville Church, of Washington, D. C., and Charles H. Duell, of New York, ex-Commissioner of Patents and former justice of the Court of Appeals of the District of Columbia. Maurice M. Moore was appointed secretary to the delegation and William Osborn was disbursing officer on behalf of the Department of State.

Delegations from 40 nations were present at the conference, including representatives of the adhering nations and those representing nations specially invited to participate but who had no plenary powers. Important conventions affecting changes in both the patent and trade-mark laws were discussed at the conference, and the final convention was adopted and signed by the delegates subject to the ratification of their various governments. The treaty of Paris provided that the language of the conference and all its publications, invitations, etc., should be in French.

The conference is expected to result in much good to the adhering nations. The French ambassador, M. Jusserand, the British ambassador, Mr. Bryce, the Mexican ambassador, Señor Zamacona, the minister of Portugal, Viscount de Alte, and the vice president of the conference, M. Georges de Ro, of Belgium, all expressed themselves at the official banquet in very kind and flattering terms as to the work accomplished and also regarding the entertainment furnished the visiting delegates by the United States Government. The formal conference was opened by me as chairman of the United States delegation, and after addresses by the Secretary of State, Hon. Philander Chase Knox, and the Secretary of the Interior, Hon. Walter Lowrie Fisher, who welcomed the delegates on behalf of the United States, the chair was relinquished to the permanent president of the conference, ex-Ambassador Charlemagne Tower. The deliberations were presided over by M. de Ro, of Brussels, the vice president of the conference.

It was the announced opinion of all the delegates present that it was the most successful conference of the union ever held.

Aside from the very desirable changes of the laws of nations relating to patents and trade-marks, there is another important underlying reason why these conferences are desirable. They bring together men familiar with the subjects to be discussed and who become well acquainted and talk over their differences not only in formal session but in private conversations.

During the conference I received a cablegram which stated that the German Reichstag had passed a patent law which upheld the treaty between Germany and the United States providing that patents of American inventors should not be revoked by the German Government for failure to work or manufacture the same in Germany within four years, provided, however, the same is manufactured in the United States in the same period of time. This so-called "working clause" is embraced in the laws of nearly all nations, but since the treaty with Germany has been entered into, several of them have modified their laws in this respect. In addition to negotiating the treaty with Germany, I also visited several other countries at the direction of Secretary of State Knox and Assistant Secretary Huntington Wilson, and the result has been the revision of the laws relating to the working clause in Norway, Sweden, and Switzerland, so that the manufacture of patented inventions in these countries by United States citizens is no longer required in order to sustain their patents. It is thought that several other countries will speedily ollow this example.

## NEED FOR ADDITIONAL SPACE FOR THE PATENT OFFICE.

In my previous fiscal year reports to the Secretary of the Interior and in the reports to Congress which the Commissioner of Patents is required by statute to make in the month of January of each year, I have strongly advocated the provision of more room for housing the United States Patent Office. I now wish to urge this in the strongest possible terms.

It is, of course, well known throughout the country among inventors and manufacturers and the public generally that the present accommodations for the Patent Office are entirely obsolete and inadequate as to both space and equipment, and are so much so as to seriously interfere with the expeditious and careful handling of the work of the office and a downright hardship to the inventors and the public. Congress has provided more force and larger salaries, but the great present need to-day in this bureau is more room.

I submitted to your two predecessors, Secretaries Garfield and Ballinger, plans for the remodeling of the present building, in order to provide additional space. Those plans were prepared under my direction and submitted to the Supervising Architect of the Treasury and to the Architect of the Capitol, who approved them without change. The plans called for the excavation of the sidewalks around this building, so as to provide suitable storage vaults roofed with cement walks, lighted beneath by electricity and affording a housing for the several million copies of patents which are necessary to retain in stock, where they are called for daily, and which now fill every available foot of blank wall and storage space in the present building from the basement to the roof, with the exception of what is termed "the secretary floor."

These plans also contemplated the removal of the mass of earth in the court, which rises 10 feet above the lower basement rooms and shuts off light and makes those rooms damp, and the erection on the level space thus obtained a one-story building with a glass roof, which would also afford many thousands of feet of storage space; also that a structure two rooms wide be erected from north to south across the court, four stories in height, which would give additional rooms for the working force without cutting off light and air, and that the roof of the present building be raised and another floor placed in the top story which was formerly used for model halls. There is great waste of space in the present building, which was erected before any such large increase in the business of the Patent Office was expected. Another floor could easily be put in and the basement, sidewalks, and court excavated as suggested, which would afford accommodations for the Patent Office and the secretary's office too, which I know is also congested.

The present structure is not fireproof, and is piled high with tons upon tons of inflammable matter, comprising the secret archives of the office, which, if destroyed, could never be replaced and the loss of which would work untold damage to the commercial interests of the country. Much of this material is stored in wooden cases and on open shelves, subject to the ravages of time and other destructive agents. There are also recorded in this office the deeds of all assignments of titles to inventions, which are of the greatest value in determining the ownership of valuable patents, and the loss of which by fire or otherwise would be a tremendous blow to the commercial interests of this country.

Probably in view of the then existing deficit in the Treasury it was necessary to refuse the appropriation for the performance of this work. But conditions have been growing worse and worse, so I can say that we have about reached the limit of congestion. Many tons of valuable books and reports were removed from the basement in a rotted condition, owing to the dampness caused by the earth of the court, and the conditions are so deplorable that I think some immediate action should be taken by Congress, which is quite conversant with the conditions. The District fire department, and other officials, were invited by Chief Clerk Ucker to inspect, and they have pronounced the building unsafe as to fire, and the engineers of the War Department have said that the walls should be lightened of their great weight, especially in the northwest corner of the building. All these reports are on file in the department.

If you will permit me, I will suggest that some suitable building be rented for the Patent Office, to be used until the present building could be thoroughly remodeled, and if thought desirable, when that is done the bureaus which are now in rented quarters, such as the Geological Survey, the Reclamation Service, and the Bureau of Mines, could be housed in the present Patent Office Building and a new building erected to accommodate the constantly growing force and business of the Patent Office while the Patent Office was occupying temporary quarters.

A bill was introduced by the late Senator Daniel in the Sixty-first Congress (S. 1629) providing for the erection of a new building for the Patent Office on the property adjoining the Congressional Library on the north. This is a desirable site, as a subway could be arranged which would give the Patent Office access to the Library of Congress and the readers in the Library would have access to the scientific library of the Patent Office. That site too, it is thought, would be very convenient to out-of-town inventors, manufacturers, and attorneys arriving at the Union Station, which is within three squares of the proposed site, and as there are several first-class hotels in the immediate neighborhood it would be an ideal location.

I make these suggestions as to remodeling the Patent Office Building and the erection of a new structure, and the temporary housing of the Patent Office, for the reason that the work of the Patent Office is current and can not be interrupted for the purpose of remodeling the present building. As the surplus of receipts over expenditures of the Patent Office amounts to more than $7,000,000, it is only fair that some, if not all, of this sum should be used to furnish larger and better quarters with modern facilities for the force, which would then be in position to accomplish the best possible results in the work for which the outside inventive public pays the total cost.

Great Britain and Germany have each been forced within the past five years to provide larger buildings owing to the great annual growth of business pertaining to patents, trade-marks, designs, and labels and prints.

I can not too strongly urge the great need of immediate and special relief for this bureau, both as to room and safeguards against fire as well.

I attach hereto for your information a table showing a comparative statement of the business of the Patent Office from 1837 to December 31, 1910, inclusive.

Very respectfully submitted.

EDWARD B. MOORE,
*Commissioner of Patents.*

The SECRETARY OF THE INTERIOR.

*Comparative statement of the business of the office from 1837 to 1910, inclusive.*

| Year. | Applications. | Caveats filed. | Patents and reissues. | Cash received. | Cash expended. | Surplus. |
|---|---|---|---|---|---|---|
| 1837 | .......... | .......... | 435 | $29,280.08 | $33,506.98 | .......... |
| 1838 | .......... | .......... | 520 | 42,123.54 | 37,338.92 | $4,784.62 |
| 1839 | .......... | .......... | 425 | 38,019.97 | 34,543.51 | 3,476.46 |
| 1840 | 765 | 228 | 473 | 38,056.51 | 39,020.67 | .......... |
| 1841 | 847 | 312 | 495 | 40,413.01 | 52,666.87 | .......... |
| 1842 | 761 | 291 | 517 | 36,505.63 | 31,241.43 | 5,264.20 |
| 1843 | 819 | 315 | 519 | 35,315.81 | 30,776.96 | 4,538.85 |
| 1844 | 1,045 | 380 | 497 | 42,509.26 | 36,344.53 | 6,164.73 |
| 1845 | 1,246 | 452 | 503 | 51,076.14 | 39,395.65 | 11,680.49 |
| 1846 | 1,272 | 448 | 638 | 50,264,16 | 46,158.71 | 4,105.45 |
| 1847 | 1,531 | 533 | 569 | 63,111.19 | 41,878.35 | 21,232.84 |
| 1848 | 1,628 | 607 | 653 | 67,576.69 | 58.905.84 | 8,670.85 |
| 1849 | 1,955 | 595 | 1,077 | 80,752.78 | 77,716.44 | 3,036.34 |
| 1850 | 2,193 | 602 | 993 | 86,927.05 | 80,100.95 | 6,826.10 |
| 1851 | 2,258 | 760 | 872 | 95,738.61 | 86,916.93 | 8,821.68 |
| 1852 | 2,639 | 996 | 1,019 | 112,056.34 | 95,916.91 | 16,139.43 |
| 1853 | 2,673 | 901 | 961 | 121,527.45 | 132,869.83 | .......... |
| 1854 | 3,324 | 868 | 1,844 | 163,789.84 | 167,146.32 | .......... |
| 1855 | 4,435 | 906 | 2,013 | 216,459.35 | 179,540.33 | 36,919.02 |
| 1856 | 4,960 | 1,024 | 2,505 | 192,588.02 | 199,931.02 | .......... |
| 1857 | 4,771 | 1,010 | 2,896 | 196,132.01 | 211,582.09 | .......... |
| 1858 | 5,364 | 943 | 3,710 | 203,716.16 | 193,193.74 | 10,522.42 |
| 1859 | 6,225 | 1,079 | 4,538 | 245,942.15 | 210,278.41 | 35,663.74 |
| 1860 | 7,653 | 1,084 | 4,819 | 256,352.59 | 252.820.80 | 3,531.79 |
| 1861 | 4,643 | 700 | 3,340 | 137,354.44 | 221,491.91 | .......... |
| 1862 | 5,038 | 824 | 3,521 | 215,754.99 | 182,810.39 | 32,944.06 |
| 1863 | 6,014 | 787 | 4,170 | 195,593.29 | 189,414.14 | 6,179.15 |
| 1864 | 6,972 | 1,063 | 5,020 | 240,919.98 | 229,868.00 | 11,051.98 |
| 1865 | 10.664 | 1,932 | 6,616 | 348,791.84 | 274,199.34 | 74,592.50 |
| 1866 | 15,269 | 2,723 | 9,450 | 495,665.38 | 361,724.28 | 133,941.10 |
| 1867 | 21,276 | 3,597 | 13,015 | 640,581.92 | 639,263.32 | 7,318.60 |
| 1868 | 20,445 | 3,705 | 13,378 | 681,565.86 | 628,679.77 | 52,886.09 |
| 1869 | 19,271 | 3,624 | 13,986 | 693,145.81 | 486,430.74 | 206,715.07 |
| 1870 | 19,171 | 3,273 | 13,321 | 669,456.76 | 557,147.19 | 112,309.57 |
| 1871 | 19,472 | 3,366 | 13,033 | 678,716.46 | 562,091.64 | 116,624.82 |
| 1872 | 18,246 | 3,090 | 13,590 | 699,726.39 | 665,595.00 | 34,131.39 |
| 1873 | 20,414 | 3,248 | 12,864 | 703,191.77 | 691,178.98 | 12,012.79 |
| 1874 | 21,602 | 3,181 | 13,599 | 738,278.17 | 679,288.41 | 58,959.76 |
| 1875 | 21,638 | 3,094 | 14,837 | 743,453.36 | 721,657.71 | 21,795.65 |
| 1876 | 21,425 | 2,697 | 15,595 | 757,987.65 | 652,542.60 | 105,445.05 |
| 1877 | 20,308 | 2,809 | 14,187 | 732,342.85 | 613,152.62 | 119,190.23 |
| 1878 | 20,260 | 2,755 | 13,444 | 725,375.55 | 593,082.89 | 132,292.66 |
| 1879 | 20,059 | 2,020 | 13,213 | 703,931.47 | 529,638.97 | 174,292.50 |
| 1880 | 23,012 | 2,490 | 13,947 | 749,685.32 | 538,865.17 | 210,820.15 |
| 1881 | 26,059 | 2,406 | 16,584 | 853,665.89 | 605,173.28 | 248,492.61 |

*Comparative statement of the business of the office from 1837 to 1910, inclusive*—Con.

| Year. | Applications. | Caveats filed. | Patents and reissues. | Cash received. | Cash expended. | Surplus. |
|---|---|---|---|---|---|---|
| 1882 | 31,522 | 2,553 | 19,267 | $1,009,219.45 | $683,867.67 | $325,351.78 |
| 1883 | 34,576 | 2,741 | 22,383 | 1,146,240.00 | 675,234.86 | 471,005.14 |
| 1884 | 35,600 | 2,582 | 20,413 | 1,075,798.80 | 970,579.76 | 105,219.04 |
| 1885 | 35,717 | 2,552 | 24,233 | 1,188,089.15 | 1,024,378.85 | 163,710.30 |
| 1886 | 35,968 | 2,513 | 22,508 | 1,154,551.40 | 992,503.45 | 162,047.95 |
| 1887 | 35,613 | 2,622 | 21,477 | 1,144,509.60 | 994,472.22 | 150,037.38 |
| 1888 | 35,797 | 2,251 | 20,506 | 1,118,516.10 | 973,108.78 | 145,407.32 |
| 1889 | 40,575 | 2,481 | 24.158 | 1,281,728.05 | 1,052,955.96 | 228,772.09 |
| 1890 | 41,048 | 2,311 | 26,292 | 1,340,372.66 | 1,099,297.74 | 241,074.92 |
| 1891 | 40,552 | 2,408 | 23,244 | 1,271,285.78 | 1,139,713.35 | 131,572.43 |
| 1892 | 40,753 | 2,290 | 23,559 | 1,286,331.88 | 1,110,739.24 | 175,592.59 |
| 1893 | 38,473 | 2,247 | 23,769 | 1,242,871.64 | 1,141,038.45 | 101,833.19 |
| 1894 | 38,439 | 2,286 | 20,867 | 1,187,439.58 | 1,100,047.12 | 87,392.46 |
| 1895 | 40,680 | 2,415 | 22,057 | 1,245,246.93 | 1,106,389.49 | 138,857.44 |
| 1896 | 43,982 | 2,271 | 23,373 | 1,324,059.83 | 1,113,413.71 | 210,646.12 |
| 1897 | 47,905 | 2,176 | 23,794 | 1,375,641.72 | 1,122,843.13 | 252,798.59 |
| 1898 | 35,842 | 1,659 | 22,267 | 1,137,734.48 | 1,136,196.20 | 1,538.28 |
| 1899 | 41,443 | 1,716 | 25,527 | 1,325,457.03 | 1,211,783.73 | 113,673.30 |
| 1900 | 41,980 | 1,731 | 26,499 | 1,350,828.53 | 1,260,019.62 | 90,808.91 |
| 1901 | 46.449 | 1,842 | 27.373 | 1,449,398.16 | 1,297,385.64 | 152,012.52 |
| 1902 | 49,641 | 1,851 | 27,886 | 1,552,859.08 | 1,393,345.54 | 159,513.54 |
| 1903 | 50,213 | 1,771 | 31,699 | 1,642,201.81 | 1,448,645.81 | 193,156.00 |
| 1904 | 52,143 | 1,808 | 30,934 | 1,657,326.53 | 1,476,000.38 | 181,326.15 |
| 1905 | 54,971 | 1,896 | 30,399 | 1,806,758.14 | 1,479,633.22 | 327,124.92 |
| 1906 | 56,482 | 1,885 | 31,965 | 1,790,921.38 | 1,554,891.20 | 236,030.18 |
| 1907 | 58,762 | 1,967 | 36,620 | 1,910,618.14 | 1,631,458.36 | 279,159.78 |
| 1908 | 61,475 | 2,110 | 33,682 | 1,896,847.67 | 1,712,303.42 | 184,544.25 |
| 1909 | 65,839 | 1,948 | 37,421 | 2,042,828.14 | 1,955,151.14 | 87,677.00 |
| 1910 | 64,629 | 970 | 35,930 | 2,025,536.69 | 2,005,711.94 | 19,824.75 |

# STATEMENT OF THE COMMISSIONER OF EDUCATION.

# STATEMENT OF THE COMMISSIONER OF EDUCATION.

DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION,
*Washington, October 16, 1911.*

SIR: I have the honor to submit the following statement of the operations of this office for the fiscal year ended June 30, 1911. The work of the bureau during the last fiscal year was under the direction of Dr. Elmer Ellsworth Brown, whose resignation took effect on June 30, 1911.

## DIVISION OF HIGHER EDUCATION.

This division was created by an order of February 3, 1911, and the specialist in higher education who entered upon duty in November, 1910, was appointed chief of the division which has "charge of all matters, including statistical work, relating to higher education, agricultural and mechanical colleges, professional schools, and normal schools, and such other duties as may be formally assigned to it from time to time, or which would naturally fall to it in the ordinary course of the work of this office." To this division were assigned those persons who have hitherto had charge of the routine work upon the reports, catalogues, and publications of these institutions, and also the specialist in charge of land-grant college statistics.

Through the two specialists the bureau has been enabled to enter upon the needed inspection of the work, equipment, organization, and administration of the agricultural and mechanical colleges. Thirty-two of them, nearly all of those located east of the Mississippi River, have been visited during the past year. The irregularities in the application of the Federal funds, more especially by the institutions for colored students, discovered in the course of these inspections show clearly the wisdom of providing for this field work. For the promotion of advanced work in agriculture, in cooperation with the committee on graduate study of the Association of American Agricultural Colleges and Experiment Stations, the division prepared and issued a bulletin on Opportunities for Graduate Study in Agriculture in the United States. During the year there were examined in this office the reports required to be made by the institutions endowed under the acts of Congress approved August 30, 1890, and March 4, 1907, for the more complete endowment and support of colleges of agriculture and the mechanic arts, and it was found that the appropriations made for said institutions were expended for the purposes specified in those acts. Each of the 50 States and Territories has, therefore, received for the year ending June 30, 1912, the sum of $50,000, making a total amount of $2,500,000, paid out for the year from the Treasury of the United States.

Upon the urgent request of the deans of the graduate schools represented in the Association of American Universities, the division of higher education has given much time to the preparation of a classified list of the large number of smaller colleges and universities whose students in considerable numbers each year apply for admission to these graduate schools. While the work of the division is not yet far enough along with its investigations to warrant regular publication of the results, it has already been serviceable in several directions upon special application. In the prosecution of these investigations the specialist in higher education visited 16 of the institutions having graduate schools, holding conferences with the presidents, deans, committees, and other officials. He also spent much time in the field in the South Atlantic States investigating the work of State institutions, colleges for men and for women, and institutions for the colored race—33 institutions in all. As a means of furtherance of their work, the specialists have been detailed to attend nine conferences and meetings of associations in different parts of the country, which are concerned chiefly with higher education or agricultural education.

## DIVISION OF SCHOOL ADMINISTRATION.

This division was organized May 11, 1910. It concerns itself with those problems of school administration which are met in State and city education offices, with a view to rendering the greatest possible assistance to those in charge. Under the present organization each of these two branches of work, State and city offices, has two subdivisions: (1) Administrative questions other than statistical, and (2) the measurement of administrative facts by statistical methods. Since the establishment of the division a standard scheme for the classification of legislation and judicial decisions relating to education has been prepared, and a file of the laws now in force has been classified in accordance with this scheme. During the sessions of the legislatures last winter a "Legislative circular," totaling 36 numbers, was issued, giving the most important facts relating to the progress of educational legislation. The laws that were passed are now being arranged for publication in the bulletin. The annual reports of representative cities have been indexed for ready reference. A "City school circular" has been recently begun in which it is intended to include the latest developments in the progress of city school administration for the early information of all who are engaged in this field of labor. The division has also taken a prominent part in the conferences of chief State education officers relating to the recognition of teachers' certificates issued in other States, an extended study of present laws and regulations having been made and issued in part in printed form.

In the statistical branch of the work the division has cooperated with other national agencies—committees of the department of superintendence of the National Education Association, of the National Association of School Accounting Officers, and with the Bureau of the Census—in securing the adoption of a standard form of fiscal report for cities, which it is hoped will also become the standard in accordance with which accounting systems of local school boards will be revised. In addition this bureau has revised its fiscal forms in accordance with this standard schedule, and is now endeavoring to secure the adoption of certain standard items in all reports required by State officers of local boards of education in order that uniformity in national and State reports as regards the most essential items may be brought about. In this respect satisfactory progress is being made.

With the consent of the Secretary of the Interior, and at the request of the Board of School Commissioners of Baltimore, Md., the Commissioner of Education undertook, in his official capacity, together with two prominent educators, a study of the public-school system of that city. A considerable part of the report as submitted was prepared by the Division of School Administration and the Editorial Divison of this office.

In addition this divison has made a detailed study of the expenses of certain city school systems based upon schedules prepared by agents of the Bureau of the Census, and a study of salary schedules in city school systems.

## EDITORIAL DIVISION.

The following publications were prepared and issued during the year:

Annual Report of the Commissioner of Education for 1910.

Annual Statement of the Commissioner of Education to the Secretary of the Interior for the fiscal year ended June 30, 1910.

Bulletin of the Bureau of Education:

1910, No. 2. State school systems: III. Legislation and judicial decisions relating to public education, October 1, 1908, to October 1, 1909.

1910, No. 3. List of publications of the United States Bureau of Education, 1867–1910.

1910, No. 4. The biological stations of Europe.

1910, No. 6. Statistics of State universities and other institutions of higher education partially supported by the State.

1911, No. 1. Bibliography of science teaching.

1911, No. 4. Report of the commission appointed to study the system of education in the public schools of Baltimore.

Several additional numbers of the bulletin were sent to the Printing Office during the fiscal year, but were not available for distribution until some time after the close of the year. The editor, who served as chief of the division, resigned at the close of the year to reenter the teaching profession at a considerable increase in salary.

## STATISTICAL DIVISION.

In addition to the regular work of this division, a special inquiry concerning agriculture in secondary schools has been sent to about 4,000 principals of such schools in order to obtain definite information respecting this important work.

## CORRESPONDENCE DIVISION.

During the year there was inaugurated the system of returning to writers letters requesting publications of the bureau or making inquiries which can be answered with printed matter, and sending to the writer a printed slip showing the action taken by the bureau. This system relieves the files of a large amount of useless material, renders unnecessary the preparation of a large number of letters, and has resulted in the relief of one clerk from duty in that division and his assignment to another division where additional assistance was needed. There were distributed 106,116 copies of the publications of the bureau.

## LIBRARY DIVISION.

This division, besides maintaining its current work, has also made considerable progress in the reorganization of those sections of the library still requiring it.

The total number of volumes and pamphlets accessioned, which were acquired by gift, by exchange, and by purchase, was 2,312, as against 1,890 in 1909–10; of serial and periodical publications, 16,234 numbers were accessioned. The binding accomplished—1,310 volumes—consists mainly of current publications, since the bulk of accumulated unbound material had already received attention. There were 6,772 volumes classified and catalogued, as against 6,020 in 1909–10, this year's increase being largely due to the cataloguing of long series of State school reports. The number of bibliographies compiled was 474.

A notable step toward improving the material equipment has been taken by the introduction of six modern metal bookstacks. It is hoped that this precedent may be followed in future to the point of installing metal shelving throughout the library.

By arrangement with the Library of Congress, the bureau is now receiving from that institution selected copyright deposit books transferred under section 59 of the copyright act of March 4, 1909. These transfers are expected eventually to prove an important source of book supply.

## ALASKA SCHOOL SERVICE.

During the fiscal year ended June 30, 1911, the field force of the Alaska school service consisted of 5 superintendents, 101 teachers, 8 physicians (4 of whom also filled other positions), 4 nurses, 4 contract physicians, and 2 hospital attendants. Eighty-one public schools were maintained, with an enrollment of 3,810 and an average attendance of 1,692.

In addition to providing schools for the native population, the Bureau of Education has continued its endeavor to furnish medical and sanitary relief to the natives and to care for destitute natives.

In November, 1910, the medical work in southeast Alaska was rendered more efficient by the establishment in Juneau of a hospital for natives, and during the present summer a hospital for natives was established at Nushagak, in western Alaska; in addition the Bureau of Education has a contract with the Holy Cross Hospital at Nome for the treatment of diseased natives upon the request of a superintendent or teacher.

The experience of the Bureau of Education in endeavoring, through its employees, to furnish medical relief to the natives of Alaska, demonstrated the desirability of authoritative study of the prevalence of disease among the natives of Alaska and of the means for its prevention. Accordingly, upon the request of the Secretary of the Interior, the Surgeon General of the Public Health and Marine-Hospital Service detailed Passed Asst. Surg. Milton H. Foster for duty, under the direction of the Commissioner of Education, for the purpose of supervising all measures relative to the medical and surgical relief and sanitation of the natives of southern Alaska, and for the purpose of making studies of the prevalence of disease in Alaska and of the conditions which favor its spread, with a view to inaugurating adequate methods of prevention. In accordance with said instructions, during the summer of 1911 Dr. Foster made a thorough investigation of the sanitary conditions among the natives of southern Alaska. As the result of his investigations, Dr. Foster recommends the following measures, which require action on the part of Congress: (1) The establishment of a sanitarium for cases of pulmonary tuberculosis requiring hospital treatment; (2) the establishment of a home for destitute blind and crippled natives; (3) authority for the Surgeon General of the United States Public Health and Marine-Hospital Service to appoint one of the officers of that service to act as commissioner of public health for Alaska. Dr. Foster also recommends the extension of the medical work in connection with the Alaska school service.

The expenditures for the relief of destitute natives during the fiscal year 1911 amounted approximately to $2,500, as against $4,000 in 1910 and $7,000 in 1909. Arrangements were made with the Bureau of Fisheries for the distribution of seal meat from the islands of St. Paul and St. George to destitute natives of the Aleutian Islands; also with the Revenue-Cutter Service for the distribution of medical supplies and rations to destitute natives in remote villages where the Bureau of Education has no representatives.

Upon the request of the Superintendent of the Coast and Geodetic Survey, the sphere of usefulness of the teachers of the schools on the coast north of Nome has been extended so as to include the securing of information regarding the tides and currents of the Arctic Ocean, the annual cruise of the U. S. S. *Bear* being utilized as a means of communication and instruction.

I respectfully recommend the enactment of legislation (1) requiring the attendance at school of every child between the ages of 5 and 15 during such time as the family of said child is in the village, except in case of mental or physical incapacity or when the services of the child are needed to support the family or himself; (2) placing all measures instituted by the Government for the medical and surgical relief of the natives under the general charge of the Public Health and Marine-Hospital Service.

The following is a summary of expenditures from the fund for education of natives of Alaska:

*Expenditure from appropriation for education of natives of Alaska.*

| | |
|---|---|
| Appropriation | $200,000.00 |
| Salaries in Alaska | 98,684.17 |
| Equipment and supplies | 13,687.75 |
| Fuel and light | 20,444.63 |
| Local expenses | 2,281.94 |
| Repairs and rent | 5,346.24 |
| Buildings | 10,538.66 |
| Medical relief | 20,861.35 |
| Destitution | 2,336.70 |
| Commissioner's office salaries | 6,123.17 |
| Seattle office salaries | 5,771.34 |
| Commissioner's office expenses | 225.00 |
| Seattle office expenses | 701.01 |
| Traveling expenses | 12,660.52 |
| Contingencies | 337.52 |
| Total | 200,000.00 |

## THE ALASKA REINDEER SERVICE.

The latest available statistics regarding the Alaska reindeer service are those of the fiscal year ended June 30, 1910, according to which the total number of domestic reindeer in Alaska was 27,325, distributed among 42 herds. Of the 27,325 reindeer 14,993, or 55 per cent, were owned by natives; 3,730, or 14 per cent, were owned by the United States; 4,194, or 15 per cent, were owned by missions; and 4,407, or 16 per cent, were owned by Lapps. Of the 42 herds 36 are cared for entirely by natives.

The total income of the Eskimos from the reindeer industry during the year 1909–10, including salaries earned by service in connection with the herds and the proceeds from the sale of meat and skins, was $24,656.09.

The most notable extension in the reindeer enterprise during the present year was the delivery to the Department of Commerce and Labor of reindeer from the herds in Alaska for use in stocking St. Paul and St. George Islands, in Bering Sea.

The following is a summary of expenditures from the fund "Reindeer for Alaska, 1911":

*Expenditures from appropriation for reindeer in Alaska.*

| | |
|---|---|
| Appropriation | $12,000.00 |
| Salaries of chief herders | 2,050.00 |
| Supplies | 9,837.79 |
| Establishing new herds | 100.00 |
| Contingencies | 12.21 |
| Total | 12,000.00 |

## NATIONAL EDUCATION ASSOCIATION.

The secretary of the National Education Association reports for the year ended June 30, 1911, the value of the total personal property of the association as $11,300; permanent invested fund, $180,000; net revenue from invested fund, $6,797.71; total receipts for current expenses, $48,909.08; total expenses, $34,978.95; balance June 30, 1911, $4,030.13. The chief sources of revenue are membership fees, proceeds of sale of volumes and reports, and revenue from invested funds. The chief sources of expense are printing and distribution of the volumes of proceedings, maintenance of the secretary's office and clerical force at Winona, Minn., and the expenses in connection with the annual convention.

The total registration at the annual meeting held in Boston, Mass., July, 1911, was 11,480, including associate members. There are now about 7,000 active members enrolled.

## RECOMMENDATIONS.

It is very important that all statistical reports of this bureau be issued within a short time after the date or period for which the information is collected, and these reports should be accurate and exhaustive for the subjects covered. Under the present plan of collecting statistics neither of these ends is attainable, since for all statistical data the bureau must, for promptness, accuracy, and thoroughness, depend alone on the good will and interest of many thousands of school officers of various grades in all parts of the country, without having authority to enforce compliance with any request of the commissioner, and without funds with which to remunerate anyone for filling the blanks of the schedules prepared and sent out by the bureau or for furnishing any other information. I am undertaking to arrange with the chief school officers of the several States a plan by which this bureau and the State departments of education may cooperate to secure promptly complete and reliable statistics in all educational agencies and activities, this bureau assisting State officers in the collection and preparation of material, and receiving in return from them all or most of the data needed for its use. From all of these school officers with whom I have had an opportunity to confer, I have assurance of the heartiest cooperation. If the plan proposed can be carried out the State reports in most of the States as well as reports in this bureau will be much improved. If the appropriations asked for other purposes are made, it will be possible to so reorganize the present force of the bureau as to make it possible to carry out this plan of cooperation at a cost little greater than that of the present inadequate plan. To make it entirely effective some additional legislation may be necessary in some States. This can be had, I think, within a reasonable time.

That the work of the bureau may be brought to the attention of teachers and school officers in the most effective way, and that the Commissioner of Education may have first-hand knowledge of conditions and needs which will enable him to direct the work of the bureau most effectively, he should spend much of his time in the field, attending conventions of teachers, school officers, and others interested directly and indirectly in the problems of education, visiting and inspecting typical schools of all kinds and grades, and conferring with such people as can be helpful to the bureau in carrying on any part of its work. The commissioner should also, as far as possible, be relieved from the routine and details of office duty, to the end that he may have more time to plan and direct more effectively the larger work of the bureau. I therefore recommend that the position of assistant commissioner of education be created, and that sufficient traveling expenses be allowed for both the commissioner and the assistant commissioner. The assistant commissioner should be a specialist in secondary education and serve also as chief of a division of high-school education in the bureau.

The division of higher education in the bureau, with a specialist in higher education at its head, should be strengthened by the addition of a specialist in normal-school education and the training of teachers, a specialist in agricultural education to have general supervision of the expenditure of the large amount of money given annually by the Federal Government for the support of agricultural and mechanical colleges, and a specialist in agricultural education to give his time to the agricultural and mechanical colleges for negroes in the Southern States, helping them to a better use of the funds they receive from the Federal Government. The salary of the specialist in higher education should be so increased as to enable the bureau to retain the services of a competent man in that position. This division should have at least three additional clerks.

Much more than half the children in the United States live under rural conditions in small towns, villages, and open country. All their education must come through rural schools. The rural school problem is admitted to be the most difficult of all school problems. This bureau has in the past been able to give very little direct help toward its solution. There should be in the bureau a comparatively large group of competent men and women giving their entire time and energies to this problem, with freedom, under the direction of the commissioner, to study it directly as well as indirectly wherever it can be studied to best advantage, to prepare bulletins on this subject for the general information of the people, and to go to any part of the country to give direct and specific assistance whenever needed.

Over all the world the demand for industrial, or vocational, education is growing. In our own country teachers and laymen in urban and rural communities alike are demanding that the schools shall do something to prepare the masses of boys and girls for effective service in some industrial occupation, fit them to make a living and to contribute their part to the commonwealth. How this shall be done and in what kind of schools no one seems to know certainly and fully. Experiments of many kinds are tried in many places. Much money is being spent for it and much more will be spent, more or less wisely. Commissions are sent abroad to study the efforts of other countries to solve this problem. Committees have been appointed by many societies in this country to investigate and report upon it. Education conventions devote their programs to it. A national society for the promotion of this kind of education has done much valuable work. There is great need in this bureau for a group of competent specialists and assistants to study the various phases of this problem;

bring together and digest the work and reports of associations, committees, and commissions; help toward the formulation of some clearly understood fundamental principles; and assist State, county, and city boards and supervisors in working out their practical application, either in the ordinary schools, modified for this purpose, or in new kinds of schools, as may finally seem most wise.

Twenty million children and young people in the United States spend a good portion of their time in school every year. The indoor sedentary life required by the work and discipline of the school is more or less unnatural for childhood and youth, and unless the conditions under which the school work is done are intelligently controlled, there is constant and grave danger that the health of the children may be injured, their vitality lowered, and their happiness and their value as citizens diminished throughout their lives. Modern science has brought to light many important principles of health, the means of the application of which should be known to all teachers and school officers. The Federal Government should give to the health of its children and future citizens not less care and attention than it gives to the health of the live stock of the country. To this end there should be in this bureau a specialist in school hygiene and sanitation, and he should have assistants and clerks to enable him to do this work effectively.

The growth of our cities has been very rapid and the number of large cities in the country has become very great. In such cities a large proportion of the public revenues is spent on the schools. The demands on these schools are more numerous every year than they were the year before. The problems of city school administration therefore are ever more difficult and complex. With a competent specialist in city school administration, and an efficient group of assistants and clerks, this bureau could render valuable and much-needed service to the cities. It should be enabled to do it.

The bureau now has one of the most complete collections of books, pamphlets, and reports on education in the world, and many thousands of bound volumes and pamphlets are added to it each year. This library should be made more serviceable not only to the members of the bureau itself, but also to students in education throughout the country. To investigators in all phases of education it should become the chief source of information. All such students and investigators should come freely to this library, and the material in the library should be sent freely to them. In either case they should receive from the bureau effective help in their studies and investigations and wise guidance in the use of the material in the library. For this purpose and for the supervision of the preparation of many bulletins which the bureau has prepared from time to time by individuals and committees outside its own staff there should be in the bureau a man well versed in the history, theory, and practice of education, who might give his entire time to this work. The bureau should also be able to carry on cooperative studies in secondary and elementary education under varying conditions in different parts of the country, securing for this purpose the services of expert teachers and supervisors. A small appropriation for this purpose could be made to bring very large results. The bureau needs also an assistant editor, a skilled librarian, and at least one additional translator. For the salaries of the specialists, assistants, and clerks required for the purposes here set forth and for expenses for travel and other purposes necessary to make their work effective I am submitting estimates for new appropriations amounting to $140,420. I feel sure every dollar of this can be used by the bureau for the effective service of the country.

For the education of natives of Alaska I am submitting estimates for an increase in appropriation amounting to $48,000. Last year Commissioner Brown asked for an increase of $50,000 for this purpose and justified the increase on the ground of the "expansion of the sanitary and industrial education of the natives and the need of extending this service to numerous villages which are well known and are unprovided with either physicians or schools." A careful investigation of the reports of the Alaskan school service convinces me that this increase is urgently needed.

All of which is respectfully submitted.

P. P. CLAXTON, *Commissioner.*

The SECRETARY OF THE INTERIOR.

# REPORT OF THE DIRECTOR OF THE UNITED STATES GEOLOGICAL SURVEY.

# THIRTY-SECOND ANNUAL REPORT OF THE DIRECTOR OF THE UNITED STATES GEOLOGICAL SURVEY.

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GEORGE OTIS SMITH, *Director.*

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The appropriations for the work of the United States Geological Survey for the fiscal year 1910–11 comprised items amounting to $1,477,440. The plan of operations was approved by the Secretary of the Interior and a detailed statement of the work of the several branches and divisions of the Survey is presented on later pages of this report.

## SPECIAL FEATURES.

### WORK ON THE PUBLIC LANDS.

The scientific investigations of the Survey have been continued along lines similar to those followed in other years and the usual amount of contributions have been made to the knowledge of geology and related subjects. Among the special features of the year's activities the work in the public-land States should be given first place. The field examination of the public lands has become an increasingly important feature in the Survey's work, yet the standard attained is so dependent on past and present scientific investigations that the credit is necessarily given to the same field organization for both the scientific and the applied results.

In the last 12 months the amount of work done, both in field investigations contributing to the classification of the public lands and in the preparation of the results of land classification, has exceeded that done by the Survey during any preceding year. The field investigations and examinations have been more extensive and more detailed and reports covering a wider range of subjects have been prepared and submitted to the Secretary's office and to the General Land Office and the Office of Indian Affairs.

An illustration of the extent to which this contribution to public-land administration depends on the accumulated results of the field work of the Survey is afforded by the land-classification reports that are based in large part on the work of the water-resources branch.

These include reports to the Secretary of the Interior made in connection with the designation of nonirrigable lands under the enlarged-homestead act and with recommendations for the withdrawal from entry of lands valuable for water-power or reservoir sites under the withdrawal act, as well as similar reports furnished the Commissioner of the General Land Office on right-of-way applications and on applications for segregations of irrigable lands under the Carey Act. The preparation of these reports requires wide and intimate knowledge of the conditions existing in the public domain, as well as engineering judgment of a high order. Definite results concerning much of this work could not have been attained had not records of the surface and underground water resources of the public domain been available—records which represent the accumulated results of work done by the Geological Survey under appropriations covering many years.

The extent to which the work performed in other years by the geologic, topographic, and water-resources branches of the Survey has been utilized to the advantage of the public can be inferred from this year's records of the land-classification board, which in public-land matters acts as the clearing house of the Survey's field service.

## PUBLIC-LAND LEGISLATION.

### NATURE OF THE GEOLOGICAL SURVEY'S WORK.

The increasing share which the Geological Survey has been asked to take in the public-land administration by the Interior Department has brought many of the problems connected with the public-land laws more directly to the attention of those charged with the work of this bureau. For over 30 years, however, these problems have interested the Federal geologists, who have had exceptional opportunities for first-hand observation in nearly all the important mining districts of the country, and for almost as long a period the engineers of the Survey have been in touch with the irrigation and power developments in the public-land States. This intimate experience with both field conditions and administrative problems justifies an expression of opinion concerning the land laws, which, it is believed, will be appropriate to this administrative report. To a large extent the principles here presented and the specific provisions advocated have been expressed in memoranda submitted by the Geological Survey to the Secretary of the Interior during the last four years.

### PROPOSED AMENDMENT OF PUBLIC-LAND LAWS.

#### PURPOSES AND MEANS OF AMENDMENT.

The objects to be sought by amendment of the public-land laws are, first, purposeful and economical development of resources for which there is present demand, with retention of such control as may insure against unnecessary waste or excessive charges to the consumer, and, second, the reservation of title in the people of all resources the utilization of which is conjectural or the need of which is not immediate. The means that are essential to the attainment of these objects are, first, the classification of the public lands, second, the separation of surface and mineral rights, and third, the disposition of the lands on terms that will secure the highest use, enforce development, and protect the public interest. Legislation based on these principles will not only secure the positive benefits of immediate utilization, but will also avoid the evils of speculative holdings of lands by fictitious use or by admitted nonuse for the future enjoyment of the unearned increment or of the profits of monopolization. With actual development made a condition of possession, and with land classification and separation of estates made preliminaries of disposition, the present-day utilization by individuals or corporations and the reservation to the people for future use become at once possible without conflict of interests.

The classification of the public land is essential to the administration of not only such laws as express the principle of separation, but also of those whose purpose is to promote the highest use of the land. Land classification is first of all the determination of the best use to which each particular portion of the public domain can be put, and by the organic act of March 3, 1879, this duty was specifically imposed upon the Director of the Geological Survey. The progress now being made in this work is set forth in another part of this report. (See pp. 298–312.)

Separation of surface and mineral rights might be effected without classification of land by the automatic reservation of all mineral deposits to the United States in every patent issued as a result of nonmineral entry, selection, or purchase. Legislation of this type would possess the merit of simplicity and effectiveness, but the well-known objection to limited patents would with considerable reason be made the basis for the contention that the Government should assume the burden of classifying its land before disposition.

The classification of the public domain is itself an outgrowth of the principle of relative worth, which early found expression in the land laws of this country, in that they provided for the reservation of mineral lands from disposition for other purposes. The present coal-land law also expresses this principle of relative worth by giving deposits of gold, silver, and copper priority over coal, and coal, in turn, preference over agricultural values. Such distinctions necessitate land classification based on adequate field examination, and with the classification data at hand the principle of relative worth can be further developed. Wherever the different values of the land conflict the highest use should prevail, and under legislation that does not oppose the principles of economic law the highest use will prevail.

Under the withdrawal act of June 25, 1910 (Stat. L., vol. 36, p. 847), classification is made possible in advance of disposition, and disposition can be postponed to await immediate legislation. Fully to accomplish this purpose, for which it was enacted, the withdrawal act itself needs amendment in several particulars. No withdrawal is effective against location or appropriation for minerals other than coal, oil, gas, and phosphate, the apparent intent of the law being to promote the exploration and discovery of metalliferous minerals. However, this exception to the application of the withdrawal law is far too broad, in that it would include such minerals as potash or nitrates, the disposition of which is a matter of no less vital concern to the agricultural interests of the nation than is the proper utilization of the phosphate deposits. So, too, it is true that attempts are being made to claim sand and gravel as minerals excepted by the law and under such contention to secure control of power sites, even in the face of an executive withdrawal. Connected with this defect in the law is the lack of recognition therein of the principle of relative worth. There is a too evident opportunity for a gypsum entryman, notwithstanding the fact that the gypsum, by reason of poor quality or lack of transportation facilities, may be worthless commercially, to set up a claim for title to a tract of great prospective value for oil—a tract which is protected from oil entry by an oil withdrawal. Similarly, under the mineral law it is possible to seek title to the walls of a narrow canyon, withdrawn as a power site, in spite of the great discrepancy between the utterly negligible value of the building stone it contains and the strategic importance of the dam site.

### SEPARATION OF SURFACE AND MINERAL RIGHTS.

The first step, both in principle and practice, in any amendment of the land laws, appears to be that of making possible by legislation the separation of surface and mineral rights whenever the two estates have values which can be separately utilized. A notable advance in public-land legislation was the passage of the acts of March 3, 1909 (Stat. L., vol. 35, p. 844), and June 22, 1910 (Stat. L., vol. 36, p. 583), which provide that patents issued thereunder grant title to the surface of the land only and thus permit its agricultural development, while at the same time the United States retains title to the underlying coal deposits. The results have been of undoubted value in permitting homestead and desert-land entries, Carey Act selections, and reclamation-act withdrawals on lands which are withdrawn or classified as coal lands or are known to be valuable for coal.

A similar separation of surface and mineral rights should be extended to all other nonmineral entries, selections, or locations, to include oil, gas, and phosphate lands as well as coal lands, the mineral rights to be reserved to the United States until they can be disposed of most beneficially to the people. For all these lands the need of legislation for the separation indicated is not academic but actual, since under each class there are already requests for surface patents.

Similar legislation applying the principle of separation is demanded in order to reserve to the Government the exclusive right to grant easements for the future development of water resources, for either power or irrigation, and at the same time to make provision for grants of surface patents for the agricultural use of the land, or of mineral patents where mining may not interfere with water-power development. During the last year the principle involved in this proposed legislation was recognized by the enactment of an item in the Indian appropriation act which provides for the issuance of limited patents on the shores of Flathead Lake, in Montana, where increased storage for power and irrigation may be at some future time found to be advantageous. A further recognition of this principle was given in the water-power bill introduced by Representative Parsons at the third session of the Sixty-first Congress (H. R. 33000), wherein provision is made for a double use of land leased for water-power utilization and for the reservation in perpetuity to the United States of all rights to future occupancy and use for water-power development on all lands designated by the President. The need of statutory authority for limited patents is most evident in regions where, because of the possibility of future power development, lands are now withdrawn which possess present value for agricultural use. Provision should be made whereby future power development will be absolutely insured whenever the value of the lands for such use would exceed their actual agricultural value.

The chief advantage of land withdrawal and classification lies in its essential relation to the principle of proper disposition of the public domain, the real purpose of public-land administration being to insure such reservation or disposal of the people's land as will result in its highest use. The question of amendment of the present laws relating to the disposition of coal, oil, gas, and phosphate deposits on the public domain is recognized as fairly before the public by the specific mention of these minerals in the withdrawal act.

### LAW APPLICABLE TO COAL LANDS.

The coal-land law is unquestionably the most satisfactory of the present mineral-land laws in that it admits of the placing of an adequate valuation upon the deposits, and in the administration of this law the purpose is not only to base the appraisal price upon the quantity and quality of the coal present and to give consideration to every known physical and commercial factor affecting the value of the deposits, but also to make the selling price approach as nearly as possible the present purchase price of a royalty under a leasehold. Thereby it is intended to permit purchase for immediate development and at the same time to prevent, or at least discourage, purchase for long-time investment or for monopolization. So many factors, however, require consideration that an ideal adjustment of the values is well-nigh unattainable for many, if not for most, coal lands, and on this account a strong argument may be made for support of the lease over the sale system. Under leasehold it would be comparatively easy so to adjust the relationship between ground rental and royalty as to prevent the acquisition of coal deposits until such time as their development should be profitable. On the other hand, it is possible, under the present law, and it is the policy in its administration, to readjust the prices from time to time, either by reduction to encourage development in special cases or, more commonly, by raising the price on account of increased value due to new discoveries or to changed commercial conditions. The greatest advantage of the lease system to the operator directly, and to the public indirectly, is relief from the large capital outlay now required in the acquisition of the large acreage absolutely necessary for a modern mine. This argument advanced against the present policy of valuing the public coal lands at even conservative prices thus becomes an argument for a leasehold law. Thus contrasting the lease with sale outright to the coal operator, the reduction in capital necessary for original investment and the elimination of many of the risks in such investment must result in reducing the cost of operation to the mine owner and thus make possible a correspondingly lower price of coal to the consumer. Hardly less important, moreover is the better control possible under a lease system, although against the advantage of such control must be weighed the cost of Federal management and the possibilities of inefficient administration or even maladministration.

The present coal-land law, however, has one serious defect, which should be remedied if a leasing law is not enacted. The restriction of area that may legally be acquired to a maximum of 160 acres for an individual and 640 acres for an association is not in accord with good mining practice. The fixed charges on the cost of a modern coal mine, provided with the up-to-date equipment necessary to conserve life and property and to assure maximum recovery, are too high to be assessed against the output of so small a tract, especially if the coal seam is of only moderate thickness. A law designed to promote the practical utilization of coal deposits, whether the system contemplates sale or lease, must provide for the holding of a large enough unit to permit the opening and equipment of a modern mine and to warrant its economical operation. Without such provision for commercial operation too great an advantage is given to the land-grant railroads and large coal companies already in possession of considerable areas of high-grade coal.

### LAWS APPLIED TO PHOSPHATE LANDS.

The present uncertainty whether the phosphate rock of the public land should be entered under the lode law or under the placer law is conclusive evidence of the need of legislation. As a matter of fact neither of these laws is more applicable to the acquisition of beds of phosphate-bearing limestone than it would be to that of coal beds. The realization that the phosphate deposits are more extensive than was known or suspected when the Survey geologists began land classification work in Idaho and Wyoming does not lessen but rather increases the urgency for a leasing law which will provide for the utilization of this large supply of mineral fertilizer, so as to meet both present and future needs.

### LAW NEEDED FOR OIL AND GAS LANDS.

The most urgent need of legislation for the disposition of mineral deposits is in the case of oil and gas. It is most apparent that the placer law, which is none too well adapted to meet modern conditions in mining placer gold, is wholly inadequate if applied to public oil lands, inasmuch as oil is discovered at a late stage in the exploration and development of the land claimed under the law. Thus, large expenditures, extending over several months, if not years, are necessary before any right is acquired against the Government, and during all this time there is no legal protection of the oil prospector against unscrupulous claimants or competitors better backed by capital. The need for remedial oil legislation is somewhat less pressing than it was a year ago, by reason of the passage of the act approved March 2, 1911 (Stat. L., vol. 36, p. 1015), the effect of which is to validate a class of claims that, although clouded by the construction which the department was forced to place upon the misfit placer law under which title to oil lands must now be gained, were bona fide in that the inception of their development antedated the oil-land withdrawals. This legislation was in accord with the spirit of the withdrawal act, which provides for the protection of equities already established. The need for a better law is, however, imperative, and the legislative action demanded by the situation should not be limited to an attempt to revamp the general placer law, but should consist of the enactment of an altogether new measure, especially adapted to provide for the sane and equitable development of this industry in the future. First, the new law should authorize the issue of exploratory permits, granting to individuals or associations the exclusive privilege of occupation, the sole condition of such a grant being diligent and adequate prosecution of development work, measured by the expenditure of fixed sums within certain periods, with possibly the payment of a small fee to the Government in lieu of such expenditure during the first six months. The issue of this permit should preferably be limited to one to each citizen or association of citizens, although after the lapse or surrender of such a permit the former holder should be allowed to apply for another exploratory permit. In the second place, the law should provide that upon discovery the holder of the permit be given a leasehold title with a royalty varied to meet local and actual conditions. The "wildcatter" or prospector in unproved country, whether such unproved territory is classified on geologic evidence as oil land or not, should be given special privilege to offset his greater risk. This privilege might take the form of an increased acreage, held both under permit and under lease, or a practical exemption from the payment of royalty, merely a nominal rental being charged under the lease. The chief advantage of the leasehold for oil over a fee-simple title lies in the prevention of monopolization through large holdings. Such large holdings without production would be guarded against by a ground rental sufficiently high to discourage the acquisition of lands except for immediate and continued development, although provision should also be made in the lease for surrender under terms which would protect the Government. This indirect control of development would be preferable to the direct enforcement, by forfeiture, of continuous production, which should be avoided because of the danger of disturbing the delicate equilibrium between supply and demand. Transfers of interest, under either permit or lease, should be permitted because of the absolute necessity in most instances of procuring capital for both drilling and operating an oil well. The law, however, should set forth the purpose of the control of such transfer, which would be to provide protection for the original locators, most of them men of small means, and more especially to insure the prohibition of too large holdings of Government leases by big companies.

### LAWS RELATING TO METALLIFEROUS MINERALS.

Proposed amendments of the well-established laws relating to metalliferous minerals always raise the warmest discussion. With the opinion of mining men in general favoring revision of mining laws of the United States and with commission after commission appointed by various bodies to suggest improvements, the statutes have remained practically unchanged for nearly 40 years, while the geology of ore deposits and the technology of metal mining have made marvelous progress.

The law of the apex has proved more productive of expensive litigation than of economical mining. In many of the more recently established and more progressive mining districts this statute has been made inoperative either by common agreement or by compromise between adjoining owners. Its repeal could not affect established equities under patents already granted, but would render possible more certain property rights in large mining districts, not as yet discovered, where new and valuable claims will be located a hundred years from now. The unit of disposition should be the claim, preferably square, limited on its four sides by vertical planes, and of a size sufficient to allow the miner occupying two contiguous claims to follow the vein or lode to considerable depth, even if its dip is only 45°. Such definition of a mining claim is found practicable in both Mexico and British Columbia, and in the latter country the change from the apex law was effected without trouble or confusion.

The same knowledge of natural conditions that leads to the suggestion of a repeal of the law of the apex forces the further suggestion that discovery of ore in place can not be made universally a prerequisite to the location of a mining claim. Geologic study of ore deposits has furnished examples in a number of regions where the present law can not be complied with, although rich deposits exist underground and their extent can be more definitely surmised than in most places where ore is discovered at the surface. To meet such actual conditions the law should provide for the acquisition of metalliferous mineral land classified as such upon the basis of adequate geologic evidence, whether actual outcrops are present or not.

Most important, perhaps, in any amended mining law would be provision for enforced development, a principle expressed, it is true, in the present law but not made effective in its workings. A requirement of actual use as a condition of occupancy of mineral land can not be regarded as either novel or radical. As regards the large acreage of undeveloped land in many mining camps to which patent has already been issued, it is perhaps true that the situation is without relief, unless the western Australia plan is adopted, whereby the Government steps in and permits mining under a lease, the proceeds of which are assessed, collected, and paid over to the owner. The principle invoked seems to be that no property owner can rightfully oppose the development of the resources of the State.

In the case of unpatented claims a remedy should be sought for what has been termed "the paralysis of mining districts," and the rigid requirement of annual assessment work should be made actual and effective by inspection and supervision, in order to put an end to the present procedure of allowing a claim to lie idle for practically two years after its location, not to mention the many localities where claims are held year after year with only perfunctory compliance, or even without any performance of assessment work—a type of local disregard for law that is in striking contrast to the observance accorded to the district customs and regulations of earlier days, whereby the right of possession was made absolutely dependent upon continuous operation.

The remedy, then, for the existing evil of idle mining property must be sought either in the adoption of leasehold, under which the Government can enforce operation, a system which fully attains the desired end of promoting mining development in Australia and New Zealand, according to the report made in 1907 by Geologist Veatch, of this Survey, to the President, or in the thorough revision of the existing system. Radical amendment to the present law would be necessary in order to secure something more nearly approaching equality of opportunity. Some limitation should be put on the number of claims which an individual can locate in each mining district, and the prevention of monopolization would be furthered by the rigid enforcement of assessment development. The record of claims kept by a local official elected by the miners should be reported to the nearest land office in order to furnish the Federal Government with a notice of the intention of the claimant, and thus to initiate the operation of effective inspection, the purpose of which would be to enforce the use and development of mineral land as comtemplated in the law.

### LEGISLATION REQUIRED FOR WATER POWER.

On the subject of water-power legislation the position of the Geological Survey is essentially that set forth in January of this year in a report addressed to the Secretaries of the Interior and of Agriculture by a joint committee representing the two departments. The legislation there outlined would provide for leases of public and reserved lands of the United States valuable for water-power development for a fixed term, not to exceed 50 years, with moderate charges for use and occupancy of the land, revocable only upon breach of conditions or on account of the charge of excessive rates to consumers. These leases should be identical in terms, under whatever department they are granted, with joint and uniform regulations governing all matters relating to water-power development of land belonging to the United States. Provision should also be made for periodic and equitable readjustment of charges, transfer of leases, preferential rights to renewal, and compensation for improvements at the termination of the leasehold. The law should specifically recognize water-power use as dominant, should insure to the lessee undisturbed occupancy of the land needed for such use, and should reserve for future utilization all land believed to possess value for water-power development, these lands to be designated by the President but to be open to other entry, subject to this reserved right wherever separation of the water-power use and other use is possible.

## EXAMINATIONS UNDER THE WEEKS ACT.

The act approved March 1, 1911 (Stat. L., vol. 36, p. 961), which provides for the acquisition of land for the purpose of conserving the navigability of navigable streams, imposed a new duty on the Geological Survey. Section 6 of the law provides for an examination by the Geological Survey of land whose purchase is under consideration and the submission of a report based thereon to the Secretary of Agriculture, "showing that the control of such lands will promote or protect the navigation of streams on whose watersheds they lie." The law thus places upon the Geological Survey the determination of the fundamental question whether the control of the specific tract of land pertains to the promotion or protection of navigability, and stipulates that a favorable report to the Secretary of Agriculture must precede the purchase of the tract considered.

The report thus required of the Geological Survey is believed to involve something more than perfunctory action and to consist of a showing of facts rather than an expression of opinion. The solution of complex scientific problems is required in order to establish actual and substantial relationship between control of headwater tracts and the navigation of streams, and while the responsibility for this determination had not been sought by the Geological Survey, this new application of scientific investigation to an administrative problem has been accepted by the Survey as directly in line with its geologic and hydrographic work. It was at once recognized that as the determinative agent, whose favorable report must precede any action by the National Forest Reservation Commission, the Geological Survey would be exposed to criticism alike by those favoring a " broad interpretation " of both natural and statutory law and by those who had opposed the enactment of the Weeks law as embodying a subterfuge.

On the initiative of the Survey a conference was arranged between representatives of the Department of Agriculture and of the Department of the Interior, and an agreement was reached concerning procedure in the administration of this new law, so far as the Forest Service and the Geological Survey are concerned, to the end that the examinations of land by the two bureaus might be coordinated. In this agreement, which was approved by the two Secretaries on May 3, 1911, it is set forth that the examination by the Geological

Survey will include the determination of the relation of the headwater streams to the navigable streams to which they are tributary, the local observation of the headwater stream or streams draining the tract or tracts in question with reference to run-off characteristics and to nature and amount of suspended material, the classification of the surface formations of the tract with reference to permeability and storage capacity and to resistance to erosion, and the securing of such additional topographic data, in cooperation with the Forest Service, as are needed by the two bureaus in their examination of the tract.

In accordance with the terms of this agreement work was prosecuted in Georgia, Tennessee, and New Hampshire in May and June, resulting in the submission of two favorable reports to the Secretary of Agriculture before the end of the fiscal year.

Report No. 1 refers to a tract of 31,377 acres in Fannin and Union counties, Ga., and states the following general conclusions, based on local field examination, which support the proposition that the control of this tract in northern Georgia will promote and protect the navigation of Hiwassee and Tennessee rivers, in whose basins the land examined lies.

(*a*) Toccoa River is a headwater stream contributing a relatively large low-season flow, which makes its basin one of the class best adapted to promote the navigability of the river during the dry season.

(*b*) On the Gennett tract, as elsewhere in this general district, excessive soil wastage is in progress, which is chargeable to the practice of yearly burning over the forest lands, to the tillage of steep slopes, and to the presence of fallow fields.

(*c*) Control of these lands will to an appreciable extent insure the continuance and possible betterment of the important low-water contribution of Toccoa River and will diminish the present excessive delivery of sediment into this tributary of Hiwassee and Tennessee rivers.

The National Forest Reservation Commission, on the basis of this report and the report presented by the Forest Service, authorized the purchase of this tract.

Report No. 2 refers to a tract in Blount and Sevier counties, Tenn. This tract comprises 58,213 acres in the upper drainage basin of Little River, which enters Tennessee River below Knoxville. Little River itself is navigable in its lower part and the importance of the Tennessee as a navigable stream is well known.

The general conclusions based on the local examination and presented below support the proposition that the control of this tract will promote and protect the navigation of Little and Tennessee rivers, on whose watersheds the land examined lies. These conclusions are:

(*a*) Little River is a stream whose headwater branches contribute a low-season flow largely in excess of the average discharge of the Tennessee drainage basin.

(*b*) Excessive erosion is observed in various parts of the tract, especially in those parts which have been subject to repeated burning. A sensible reduction of the amount of sediment delivered to Little River seems possible through forest management.

Action on this report by the commission was postponed, because of questions as to terms and conditions of sale raised in the report submitted by the Forest Service.

Report No. 3, on adjoining tracts in Little River basin, aggregating 3,365 acres, based on the field examination covering the tract referred to in report No. 2, was transmitted to the Secretary of Agriculture in July.

The only topographic work thus far found necessary in these examinations has been a resurvey of the Little River drainage basin, in Tennessee. Hydrographic work in the White Mountain region was begun in May and will be continued through the summer, when the necessary geologic examination will also be made of the tracts selected by the Forest Service for proposed purchase. This plan of procedure was decided upon early in May, and the selection of tracts in the southern Appalachians for immediate examination and report before June 30 was actuated, first, by the fact that much more work had already been done in that area by the Geological Survey; second, by the fact that the geologic conditions in the region were believed to be much more favorable to the contention that an indisputable relation exists between forest lands and stream regulation, and further by the fact that the offering of two large tracts having an area of 90,000 acres in especially favorable localities, promised the maximum chance for favorable reports within a minimum time.

## NECROLOGY.

### SAMUEL FRANKLIN EMMONS.

The Geological Survey suffered an irreparable loss in the death of Samuel Franklin Emmons on March 28, 1911, after a brief illness. Mr. Emmons served the Survey as an administrative chief and a scientific leader from the first year of its history, so that mention of his attainments and his work furnishes also a record of the 32 years of achievement and progress by the organization.

Mr. Emmons was graduated from Harvard College in 1861, and after a period of study abroad joined Clarence King as an assistant in the United States Geological Exploration of the Fortieth Parallel. For nearly 10 years he remained with this organization, seeing varied service and gaining wide knowledge of the geology of the West.

With Mr. Arnold Hague he was joint author of the second volume of the great Fortieth Parallel series, entitled "Descriptive geology."

With the organization of the present Survey, in 1879, Mr. Emmons was placed by King in charge of the Rocky Mountain division, with instructions to give exclusive attention to the study of the mineral wealth, and soon thereafter he began his study of the Leadville district, then newly opened. His monograph and atlas on the "Geology and mining industry of Leadville"[1] were published by the Geological Survey in 1886, and at once established the reputation of their author. The Leadville report was preceded in publication by Becker's monograph on the "Geology of the Comstock lode and the Washoe district"[2] and by Curtis's less extensive report on the "Silver-lead deposits of Eureka, Nev.,"[3] but with these, and more decisively than these, it marked the beginning of a new era in economic geology and became a model for the numerous monographic reports on western mining districts that have since been published by the United States Geological Survey.

Until a few years ago Mr. Emmons continued in general charge of the investigations of western ore deposits carried on by the Survey, and many studies were planned and completed under his supervision and with his suggestive advice. In some reports he appeared as collaborator; in others his share was less patent, although perhaps scarcely less important. He was the senior author of the monograph on the "Geology of the Denver Basin" and was the sole or joint author of several folios of the Geologic Atlas of the United States. His contributions to scientific periodicals and to the transactions of societies were numerous and important. One of the most notable of these contributions was his paper on the "Secondary enrichment of ore deposits,"[4] which was the outcome of long-continued studies at Butte and elsewhere and which enunciated principles that were at once generally recognized as being not only of unusual scientific importance but also of great practical value.

During the later years of his life Mr. Emmons, freed from the cares of official administration, returned to his studies at Leadville, and, in association with Prof. J. D. Irving, of Yale University, was engaged in extending his earlier results in the light of additional facts brought out by extensive mining operations continued through three decades. Although some of his newer material was published in 1907 as the Survey's Bulletin 320, on the Downtown district of Leadville, Colo., Mr. Emmons did not live to see the publication of his final results. The task of completing the report has fallen to Prof. Irving.

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[1] Mon. U. S. Geol. Survey, vol. 12, 1886.

[2] Idem, vol. 3, 1882.

[3] Idem, vol. 7, 1884.

[4] Trans. Am. Inst. Min. Eng., vol. 30, 1901, pp. 177-217,

Mr. Emmons was a prominent member of many scientific societies and academies both in this country and abroad, including the National Academy of Sciences, of which he was treasurer at the time of his death. In 1903 he held the office of president of the Geological Society of America. In 1909 both Harvard and Columbia Universities conferred upon him the honorary degree of Sc. D.

The chief characteristics of his work were thorough painstaking honesty of method, wide and penetrating vision in the interpretation of his facts, remarkable soundness and stability of judgment, and clarity of exposition. Himself able to express his thought in unusually clear and felicitous language, Mr. Emmons was an invaluable critic, not only of substance but of form, and those geologists who in their younger days were so fortunate as to receive his kindly yet keen criticism have found their appreciation of what he did for them grow with the passing years and will always hold him in grateful remembrance. His own writings are an eloquent protest against the view that sound science can find appropriate expression in slovenly writing.

In the course of his long life Mr. Emmons had seen the Far West make astonishing progress, especially in the mining industry, and he had the satisfaction of knowing that by his work he had materially advanced this development. He had received unsought and bore modestly the honors that men of science most prize. His name not only stood high on the rolls of science but was known to miners throughout the Rocky Mountain region as that of the man who more than anyone else had applied geologic knowledge in a way to convince them of its value.

## WORK OF THE YEAR.

### PUBLICATIONS.

The Survey's success in reaching the public with the results of its scientific work is directly measured by the distribution of its publications. In spite of the organization of the Bureau of Mines and the consequent removal of the deservedly popular technologic bulletins from the Survey's publications, the total number of reports and maps distributed by the Geological Survey in 1911 was 1,208,797, an increase of 6 per cent over the corresponding figures for 1910. An even larger percentage of increase is shown in the number of letters received containing remittances for sale publications, while the receipts for topographic maps increased about 10 per cent. The total distribution of topographic maps, which includes congressional distribution, exchanges, and issue for departmental use, as well as the half million maps sold, exhibits the gratifying increase of 15 per cent. The total distribution to the public of books and maps is equivalent to more than 99 per cent of the number of copies received during the year from the Government Printing Office and the Survey's engraving and printing division.

The notable increase in the amount of editorial work also furnishes a gratifying item in the year's record. The number of manuscript pages read in 1911 exceeds the largest number read in any previous year by nearly 10 per cent and exceeds the work of some recent years by 100 per cent. In pages of final proof read and indexed this year's record has been exceeded by only two years, and this excess is in part apparent rather than real, by reason of changes in measure of page and size of type, while the cost of editorial work has been much less than in other years in which a comparable amount of work was performed.

The publications of the last fiscal year are briefly described in the following summaries:

Thirty-first Annual Report of the Director of the United States Geological Survey to the Secretary of the Interior for the fiscal year ended June 30, 1910.

A report on special features of the Survey's work, brief abstracts of publications of the year, and a summary of the work by branches and divisions, with maps showing the progress of topographic and areal surveys.

Professional Paper 68. The ore deposits of New Mexico, by Waldemar Lindgren, Louis C. Graton, and Charles H. Gordon. 1910. 361 pp., 22 pls., 33 text figures.

A detailed description of the commercially valuable ore deposits and an exhaustive exposition of the general features of the geology of the region, especially those related to the origin and occurrence of ores of metallic minerals, with descriptions of mines and prospects by counties and statistics of mineral production. Numerous maps and diagrams show the surface contour, the locations of particular mining districts, and the plans of workings of particular mines. Several plates show the appearance of typical minerals of the region in natural colors.

Professional Paper 72. Denudation and erosion in the southern Appalachian region and the Monongahela Basin, by Leonidas Chalmers Glenn. 1911. 137 pp., 21 pls., and 1 text figure.

A report on the nature, effects, and remedies of erosion in general, with a detailed account of special conditions in the region under discussion. The relations of such industries as agriculture, lumbering, mining, and power development to erosion are considered, and suggestions for improving conditions in the region are given. The effects of erosion are shown by numerous illustrations, and several photographs are introduced to indicate methods of regulating stream flow that have proved adaptable to particular conditions.

Bulletin 381. Contributions to economic geology, 1908—Part II, Mineral fuels. Marius R. Campbell, geologist in charge. 1910. 559 pp., 24 pls., 15 text figures.

A bulletin consisting of 27 short papers and preliminary reports on investigations, made in 1908, of deposits of coal, lignite, natural gas, and petroleum, including descriptions of mining districts, accounts of development work in particular localities, and results of the investigation of the character of certain mineral fuels. The illustrations are mostly maps of coal fields and sections of mines. The bulletin includes a list of other publications of the survey on petroleum and natural gas. The bulletin includes papers having the following titles:

Stratigraphy and coal beds of the Indiana coal field, by G. H. Ashley.
The Washburn lignite field, North Dakota, by C. D. Smith.
The Fort Berthold Indian Reservation lignite field, North Dakota, by C. D. Smith.
The Fort Peck Indian Reservation lignite field, Montana, by C. D. Smith.
The central part of the Bull Mountain coal field, Montana, by R. W. Richards.
The Milk River coal field, Montana, by L. J. Pepperberg.
Notes on the coals of the Custer National Forest, Montana, by C. H. Wegemann.
The Powder River coal field, Wyoming. adjacent to the Burlington Railroad, by R. W. Stone and C. T. Lupton.
The Buffalo coal field, Wyoming, by H. S. Gale and C. H. Wegemann.
The coal field in the southeastern part of the Bighorn Basin, Wyoming, by E. G. Woodruff.
The eastern part of the Little Snake River coal field, Wyoming, by M. W. Ball and Eugene Stebinger.
The southern part of the Rock Springs coal field, Sweetwater County., Wyo., by A. R. Schultz.
Weathering of coal in the arid region of the Green River Basin, Sweetwater County, Wyo., by A. R. Schultz.
Coal of the Denver Basin, Colorado, by G. C. Martin.
The South Park coal field, Colorado, by C. W. Washburne.
The Colorado Springs coal field, Colorado, by M. I. Goldman.
The Canon City coal field, Colorado, by C. W. Washburne.
The Trinidad coal field, Colorado, by G. B. Richardson.
Isolated coal fields in Santa Fe and San Miguel counties, New Mexico, by J. H. Gardner.
The Carthage coal field, New Mexico, by J. H. Gardner.
The coal field between San Mateo and Cuba, New Mexico, by J. H. Gardner.
Geology and oil prospects of the Reno region, Nevada, by Robert Anderson.
Two areas of oil prospecting in Lyon County, western Nevada, by Robert Anderson.
Analysis of crude petroleum from Oklahoma and Kansas, by D. T. Day.
The Madill oil pool, Oklahoma, by J. A. Taff and W. J. Reed.
Development in the Boulder oil field, Colorado, by C. W. Washburne.
The Florence oil field, Colorado, by C. W. Washburne.
Survey publications on petroleum and natural gas.

Bulletin 425. The explosibility of coal dust, by George S. Rice, with chapters by J. C. W. Frazer, Axel Larsen, Frank Haas, and Carl Scholz. 1910. 186 pp., 14 pls., 28 text figures.

A summary of experiments and mine investigations showing the explosibility of coal dust and the available protective measures. A history of the discussion of coal-dust explosions is given and also a brief account of recent disasters. The origin of coal dust, its distribution and ignition, and the possible means of preventing the dangers it presents are considered in the light of the results of recent experiments made in America and in Europe. The value of exhaust steam to prevent the formation of coal dust is treated at length.

Bulletin 426. Granites of the southeastern Atlantic States, by Thomas Leonard Watson. 1910. 282 pp., 27 pls., 22 text figures.

A report on the commercial granites of Maryland, Virginia, Georgia, Alabama, Tennessee, North Carolina, and South Carolina. The introductory chapter includes a discussion of the mineral and chemical composition, the physical properties, and the geologic characteristics of granites in general. Under the headings of the States named the distribution of granites in the region is considered and the features of local varieties are described.

Bulletin 427. Manganese deposits of the United States, with sections on foreign deposits, chemistry, and uses, by Edmund Cecil Harder. 1910. 298 pp., 2 pls., 33 text figures.

Detailed descriptions of the deposits of manganese ores in the United States, with chapters on the sources of the metal, the production of manganese in foreign countries, its chemical compounds and alloys, its uses in metallurgy, chemistry, and as a coloring material, and the status of manganese production in the United States.

Bulletin 429. Oil and gas in Louisiana, with a brief summary of their occurrence in adjacent States, by G. D. Harris. 1910. 192 pp., 22 pls., 21 text figures.

Outlines the modes of occurrence and methods of exploitation of oil and gas in Louisiana. Saline-dome oil and gas and stratum oil and gas are considered separately, the numerous prospects and producing fields are described, and the condition of development work is reported.

Bulletin 430. Contributions to economic geology (short papers and preliminary reports), 1909—Part I, Metals and nonmetals except fuels. C. W. Hayes and Waldemar Lindgren, geologists in charge. 1910. 653 pp., 14 pls., 75 text figures.

Includes 42 short papers or preliminary reports on investigations made in 1909 of deposits of gold, silver, copper, lead, and other minerals. Some newly developed deposits are described and the results of special investigations of particular mineral fields are reported. In addition to chapters on the more common metallic substances, contains chapters on aluminum ores, asphaltum, structural materials, abrasives, mineral paints, salines, phosphates, sulphur and pyrite, and the rare metals. A complete list of the papers included in the report follows:

Notes on the placer deposits of Greaterville, Ariz., by J. M. Hill.
Gold mining in the Randsburg quadrangle, California, by F. L. Hess.
The Weaverville-Trinity Center gold gravels, Trinity County, Cal., by D. F. MacDonald.
Placer gravels of the Sumpter and Granite districts, eastern Oregon, by J. T. Pardee.
Survey publications on gold and silver.
The occurrence of copper in Shasta County, Cal., by L. C. Graton.
Geology of the copper deposits near Montpelier, Bear Lake County, Idaho, by H. S. Gale.
The copper deposits of South Mountain in southern Pennsylvania, by G. W. Stose.
Survey publications on copper.
Notes on the mineral deposits of the Bearpaw Mountains, Montana, by L. J. Pepperberg.
Survey publications on lead and zinc.

Notes on the occurrence of cinnabar in central western Arizona, by Howland Bancroft.

Some occurrences of molybdenite in the Santa Rita and Patagonia mountains, Arizona, by F. C. Schrader and J. M. Hill.

Note on the occurrence of tungsten minerals near Calabasas, Ariz., by J. M. Hill.

Some chromite deposits in western and central California, by E. C. Harder.

An occurrence of monazite in northern Idaho, by F. C. Schrader.

Platinum in southeastern Nevada, by Howland Bancroft.

The Virginia rutile deposits, by T. L. Watson and Stephen Taber.

Notes on tungsten deposits near Deer Park, Wash., by Howland Bancroft.

Survey publications on antimony, chromium, nickel, platinum, quicksilver, tin, tungsten, uranium, vanadium, etc.

Some iron ores of western and central California, by E. C. Harder.

The Iron Age iron-ore deposit, near Dale, San Bernardino County, Cal., by E. C. Harder and J. L. Rich.

Iron ores near Dayton, Nev., by E. C. Harder.

The Jauss iron mine, Dillsburg, Pa., by A. C. Spencer.

Deposits of brown iron ore near Dillsburg, York County, Pa., by E. C. Harder.

Preliminary report on pre-Cambrian geology and iron ores of Llano County, Tex., by Sidney Paige.

Survey publications on iron and manganese ores.

Survey publications on aluminum ores.

Survey publications on asphalt.

Field investigations of structural materials, by E. F. Burchard.

Structural materials available in the vicinity of Minneapolis, Minn., by E. F. Burchard.

Structural materials available in the vicinity of Austin, Tex., by E. F. Burchard.

The slates of Arkansas, by A. H. Purdue.

The oolitic limestone industry at Bedford and Bloomington, Ind., by J. A. Udden.

Supplementary notes on the granites of New Hampshire, by T. N. Dale.

Oolitic limestone at Bowling Green and other places in Kentucky, by J. H. Gardner.

Survey publications on building stone and road metal.

Cement materials in Republican Valley, Nebraska, by N. H. Darton.

Gravel and sand in the Pittsburg district, Pennsylvania, by E. W. Shaw.

Survey publications on cement and cement and concrete materials.

Fuller's earth and brick clays near Clinton, Mass., by W. C. Alden.

Survey publications on clays, fuller's earth, etc.

The gypsum deposits of the Palen Mountains, Riverside County, Cal., by E. C. Harder.

Gypsum deposits near Cane Springs, Kern County, Cal., by F. L. Hess.

Survey publications on gypsum and plasters.

Survey publications on lime and magnesite.

Survey publications on glass sand and glass-making materials.

Survey publications on abrasive materials.

Ocher deposits of eastern Pennsylvania, by J. C. Stoddard and A. C. Callen.

Paint-ore deposits near Lehigh Gap, Pennsylvania, by F. T. Agthe and J. L. Dynan.

Survey publications on mineral paints.
Preliminary report on the phosphate deposits in southeastern Idaho and adjacent parts of Wyoming and Utah, by H. S. Gale and R. W. Richards.
Phosphate deposits east of Ogden, Utah, by Eliot Blackwelder.
Survey publications on phosphates and other mineral fertilizers.
The salt resources of the Idaho-Wyoming border, with notes on the geology, by C. L. Breger.
Deposits of sodium salts in Wyoming, by A. R. Schultz.
Survey publications on salines, including salt, borax, and soda.
Survey publications on sulphur and pyrite.
Mica deposits of North Carolina, by D. B. Sterrett.
Supposed graphite deposits near Brigham, Utah, by H. S. Gale.
Survey publications on miscellaneous nonmetallic products.

Bulletin 431. Contributions to economic geology (short papers and preliminary reports), 1909—Part II, Mineral fuels. M. R. Campbell, geologist in charge. 1911. 254 pp., 12 pls., 4 text figures.

An introduction by Mr. Campbell gives a list of coal and oil fields examined in 1909 concerning which reports are being prepared for publication by the Survey. The body of the volume comprises the following papers:

Natural gas in North Dakota, by A. G. Leonard.
The San Juan oil field, San Juan County, Utah, by H. E. Gregory.
Gas and oil prospects near Vale, Oreg., and Payette, Idaho, by C. W. Washburne.
Gas prospects in Harney Valley, Oregon, by C. W. Washburne.
Preliminary report on the geology and oil prospects of the Cantua-Panoche region, California, by Robert Anderson.
The southern part of the Cahaba coal field, Alabama, by Charles Butts.
The Powell Mountain coal field, Scott and Wise counties, Va., by M. R. Campbell and E. G. Woodruff.
The eastern part of the Bull Mountain coal field, Montana, by C. T. Lupton.
Preliminary report on the Coos Bay coal field, Oregon, by J. S. Diller and M. A. Fishel.
The Black Mesa coal field, Arizona, by M. R. Campbell and H. E. Gregory.
Coal deposits near Pinedale, Navajo County, Ariz., by A. C. Veatch.
Coal in San Benito County, Cal., by M. R. Campbell.

Bulletin 432. Some ore deposits in Maine and the Milan mine, New Hampshire, by William H. Emmons. 1910. 62 pp., 3 pls., 23 text figures.

An account of the geology and ore deposits of Maine, with detailed descriptions of the mines and consideration of their commercial value. The area covered by the report includes Hancock, Somerset, Washington, and Oxford counties, Maine, and the Milan mine in New Hampshire.

Bulletin 433. Geology and mineral resources of the Solomon and Casadepaga quadrangles, Seward Peninsula, Alaska, by Philip S. Smith. 1910. 234 pp., 16 pls., 26 text figures.

An account of the geology and geography of Seward Peninsula, particularly of the Solomon and Casadepaga quadrangles, with a statement of present economic development in those quadrangles. The work of Mr. Smith establishes the geologic relations of the rocks of the district to the rest of Seward Peninsula and shows that their structure is very complex. Large-scale geologic and topographic maps, in colors, accompany the report.

Bulletin 434. Results of spirit leveling in Delaware, District of Columbia, Maryland, and Virginia, 1896 to 1909. R. B. Marshall, chief geographer. 1910. 74 pp.

Gives the elevation above sea level of about 600 points in the area considered, arranged by quadrangles. The work in Maryland and that in Virginia during a part of the year 1908 was done in cooperation with the States.

Bulletin 435. A reconnaissance of parts of northwestern New Mexico and northern Arizona, by N. H. Darton. 1910. 88 pp., 17 pls., 8 text figures.

A detailed description of the geology of the Rio Grande Valley and the Grand Canyon of the Colorado region, undertaken to determine the prospects for obtaining deep-seated underground water supplies. The peculiar formations of the Grand Canyon are described, the mineral resources of the region are considered briefly, and numerous well records are given.

Bulletin 436. The fauna of the phosphate beds of the Park City formation in Idaho, Wyoming, and Utah, by George H. Girty. 82 pp., 7 pls.

Descriptions of invertebrate fossils found in the phosphate beds near Park City, Utah, with illustrations showing the forms discovered.

Bulletin 437. Results of spirit leveling in Maine, New Hampshire, and Vermont, 1896 to 1909, inclusive. R. B. Marshall, chief geographer. 59 pp. 1910.

Gives elevations of about 500 points, arranged by quadrangles. The work in Maine was done in cooperation with the State from 1899 to 1909, inclusive.

Bulletin 438. Geology and mineral resources of the St. Louis quadrangle, Missouri-Illinois, by N. M. Fenneman. 1911. 73 pp., 6 pls., 1 text figure.

A brief geologic history of the district and descriptions of its topography, stratigraphy, and mineral resources. Contains a geologic map of the quadrangle and illustrations showing the structure and some other geologic features. The coal, clay, quarry rock, oil, gas, sand, gravel, and water resources of the quadrangle are described in connection with its economic geology.

Bulletin 439. The fauna of the Morefield shale of Arkansas, by George H. Girty. 1911. 148 pp., 15 pls.

Descriptions of invertebrate fossils of an important section of Mississippian rocks. The species are considered individually and in detail, and most of the forms are illustrated in the plates.

Bulletin 440. Results of triangulation and primary traverse for the years 1906, 1907, and 1908. R. B. Marshall, chief geographer. 1910. 668 pp., 1 pl.

Gives the results of triangulation and primary traverse in the United States from 1906 to 1908, inclusive, listing 716 triangulation stations and 6,243 primary traverse stations, nearly all on United States standard datum. The bulletin includes a map showing the condition of astronomic location and primary control to January 1, 1909.

Bulletin 441. Results of spirit leveling in Alabama, Georgia, North Carolina, South Carolina, and Tennessee, 1896 to 1909, inclusive. R. B. Marshall, chief geographer. 1911. 145 pp.

Gives the elevations of about 1,300 points in the States named. The report includes all leveling by the Geological Survey in this area, arranged by quadrangles. The work in Alabama from 1899 to 1905 and in North Carolina in 1896 and from 1902 to 1909 was done in cooperation with those States.

Bulletin 442. Mineral resources of Alaska—report on progress of investigations in 1909, by Alfred H. Brooks and others. 1910. 432 pp., 8 pls., 8 text figures.

An annual report on the work of the Geological Survey in Alaska. Includes, in addition to an administrative report, a large number of special reports on various features of the work, among which are papers on the mining industry in 1909, the utilization of Alaskan coal, the preparation and use of peat as a fuel, and the auriferous quartz veins of the Fairbanks district. The report includes papers having the following titles:

Administrative report, by Alfred H. Brooks.
The mining industry in 1909, by Alfred H. Brooks.
Alaska coal and its utilization, by Alfred H. Brooks.
The preparation and use of peat as a fuel, by Charles A. Davis.
Mining in southeastern Alaska, by Adolph Knopf.
Occurrence of iron ore near Haines, by Adolph Knopf.
Report of water-power reconnaissance in southeastern Alaska, by John C. Hoyt.
Mining in the Chitina district, by Fred H. Moffit.
Mining and prospecting on Prince William Sound in 1909, by U. S. Grant.
Preliminary report on the mineral resources of the southern part of Kenai Peninsula, by U. S. Grant and D. F. Higgins.
Outline of the geology and mineral resources of the Iliamna and Clark lakes region, by G. C. Martin and F. J. Katz.
Gold placers of the Mulchatna, by F. J. Katz.
Sketch of the geology of the northeastern part of the Fairbanks quadrangle, by L. M. Prindle.
The auriferous quartz veins of the Fairbanks district, by L. M. Prindle.
Placer mining in the Yukon-Tanana region, by C. E. Ellsworth.
Occurrence of wolframite and cassiterite in the gold placers of Deadwood Creek, Birch Creek district, by Bertrand L. Johnson.
Water supply of the Yukon-Tanana region, 1909, by C. E. Ellsworth.
The Koyukuk-Chandalar gold region, by A. G. Maddren.
Mineral resources of the Nulato-Council region, by Philip S. Smith and Henry M. Eakin.
Mining in Seward Peninsula, by Fred F. Henshaw.
Water-supply investigations in Seward Peninsula in 1909, by Fred F. Henshaw.

Bulletin 443. Reconnaissance of the geology and mineral resources of Prince William Sound, Alaska, by U. S. Grant and D. F. Higgins. 1910. 89 pp., 12 pls., 9 text figures.

Contains detailed descriptions of the many copper mines and prospects of the district and notes on the occurrence of gold and other metals of commercial importance. The topography and general geology of the region are fully considered and the report is accompanied by a large-scale geologic map.

Bulletin 444. Bibliography of North American geology for 1909, with subject index, by John M. Nickles. 1910. 174 pp.

A list, arranged alphabetically by authors' names, of publications bearing on the geology of North America, the adjoining islands, Panama, and the Hawaiian Islands, with summaries of many of the publications. The work is indexed and includes lists of chemical analyses and of minerals, rocks, and geologic formations described.

Bulletin 445. Geology of the pegmatites and associated rocks of Maine, including feldspar, quartz, mica, and gem deposits, by Edson S. Bastin. 1911. 152 pp., 19 pls., 8 text figures.

Describes in detail the general geology and the specific occurrence of pegmatites in Maine and the relations of granites and pegmatites, and discusses at length the economically important pegmatite minerals, in respect to their occurrence, uses, production, and prices. Among these minerals are feldspar, quartz, mica, tourmaline, and beryl.

Bulletin 446. Geology of the Berners Bay region, Alaska, by Adolph Knopf. 1911. 58 pp., 2 pls., 4 text figures.

A report on the geology and ore deposits of the Berners Bay region, at the northwest extremity of the Juneau gold belt, describing the mines and prospects of the region and the mineralogy of the ore deposits. Mr. Knopf's report shows that the mineralization of south-central Alaska was synchronous with that of the Mother Lode district in California.

Bulletin 447. Mineral resources of Johnstown, Pa., and vicinity, by W. C. Phalen and Lawrence Martin. 1911. 142 pp., 7 pls., 22 text figures.

A full discussion of the geology of this important coal-bearing region, with descriptions of its mineral resources. Coal and clay, the most valuable resources, are treated in detail by districts, and many analyses of coal and clay from particular districts are given. The occurrence of glass sand, building stone, lime, cement, and iron ores is also discussed.

Bulletin 449. A geologic reconnaissance in southeastern Seward Peninsula and the Norton Bay-Nulato region, Alaska, by P. S. Smith and H. M. Eakin. 1911. 146 pp., 13 pls.

A report on the geography, geology, climate, vegetation, and mineral resources of a hitherto unexplored district. Illustrated by maps and half-tone plates. The gold placers and lode prospects of the region are described in detail, and the coal exposures are also considered.

Bulletin 452. The Lander and Salt Creek oil fields, Wyoming: The Lander oil field, Fremont County, by E. G. Woodruff; The Salt Creek oil field, Natrona County, by C. H. Wegemann. 1911. 87 pp., 12 pls., 1 text figure.

Descriptions of the stratigraphy and structure of the two fields and full accounts of the oil origin, condition of development, and available markets, with large-scale maps of the oil fields.

Bulletin 453. Results of spirit leveling in Minnesota, 1897 to 1910, inclusive. R. B. Marshall, chief geographer. 1911. 39 pp., 1 pl.

A report on precise and primary leveling in the State, showing the altitudes above sea level of more than 600 places. The work in 1909 and 1910 was done in cooperation with the State of Minnesota. This and similar bulletins contain a half-tone illustration showing designs for bench marks used by the United States Geological Survey, and all elevations are arranged by quadrangles.

Bulletin 457. Results of spirit leveling in the State of Washington, 1896 to 1910, inclusive. R. B. Marshall, chief geographer. 1911. 108 pp., 1 pl.

A report on precise and primary leveling in the State, showing the altitudes above sea level of more than 1,800 places. The work in 1909 and 1910 was done in cooperation with the State of Washington.

Bulletin 459. Results of spirit leveling in Missouri, 1896 to 1909, inclusive. R. B. Marshall, chief geographer. 1911. 48 pp., 1 pl.

A report on precise and primary leveling in the State, showing the altitudes above sea level of more than 450 places. The work from 1907 to 1909, inclusive, was done in cooperation with the State.

Bulletin 460. Results of spirit leveling in Iowa, 1896 to 1909, inclusive. R. B. Marshall, chief geographer. 1911. 32 pp., 1 pl.

A report on precise and primary leveling in the State, showing the altitudes above sea level of more than 250 places. The work from 1907 to 1909, inclusive, was done in cooperation with the State.

Bulletin 461. Results of spirit leveling in Michigan and Wisconsin, 1897 to 1909, inclusive. R. B. Marshall, chief geographer. 1911. 64 pp., 1 pl.

A report on precise and primary leveling in the two States, showing the altitudes above sea level of more than 550 places. The work from 1901 to 1909, inclusive, was done in cooperation with the States.

Bulletin 462. Results of spirit leveling in Oregon, 1896 to 1910, inclusive. R. B. Marshall, chief geographer. 1911. 82 pp., 1 pl.

A report on precise and primary leveling in the State, showing the altitudes above sea level of more than 750 places. The work from 1905 to 1910, inclusive, was done in cooperation with the State.

Bulletin 463. Results of spirit leveling in Arizona, 1899 to 1909, inclusive. R. B. Marshall, chief geographer. 1911. 94 pp., 1 pl.

A report on precise and primary leveling in the State, showing the altitudes above sea level of more than 800 places.

Bulletin 465. The State geological surveys of the United States, compiled under the direction of C. W. Hayes. 1911. 177 pp.

Brief sketches of the origin and history of the geological surveys in the several States and Territories of the United States, their organization, and the laws governing them, with statements showing the amounts appropriated and the purposes for which they have been expended. Compiled from reports submitted by the State geologists or by other officials of the surveys.

Advance chapters from Bulletin 470, "Contributions to economic geology (short papers and preliminary reports), 1910—Part I, Metals and nonmetals except fuels," as follows:

Bulletin 470–A. Phosphates in Montana, by Hoyt S. Gale. 1911. 7 pp., 2 text figures.

A report on the location and structure of phosphate deposits at Melrose, Mont., with reference to their value and accessibility.

Bulletin 470–D. Lead and zinc, by R. W. Richards and Howland Bancroft. 1911. 30 pp., 4 text figures.

Papers on the lead and zinc deposits in the Metaline mining district, Washington, and the lead and copper deposits in the Bear River Range, Idaho and Utah, with a list of Survey publications on lead and zinc.

Bulletin 470–E. Rare metals, by F. L. Hess. 1911. 12 pp., 1 text figure.

Includes a report on the arsenic deposits at Brinton, Va., and a list of Survey publications on antimony, chromium, monazite, nickel, platinum, quicksilver, tin, tungsten, uranium, and vanadium.

Bulletin 470–F. Iron and manganese, by Charles Butts. 1911. 22 pp., 4 text figures.

A report on the iron ores in the Montevallo-Columbiana region, Alabama, with sketch maps showing the location of the deposits and a list of Survey publications on iron and manganese.

Bulletin 470–I. Mineral paints, by B. L. Miller. 1911. 15 pp.

A paper on the paint shales of Pennsylvania and a list of Survey publications on mineral paints.

Bulletin 470–J. Sulphur and pyrite, by R. W. Richards and J. H. Bridges. 1911. 8 pp., 1 text figure.

A report on the sulphur deposits near Soda Springs, Idaho, and a list of Survey publications on sulphur and pyrite.

Bulletin 470–K. Miscellaneous nonmetallic products. 1911. 45 pp., 6 text figures. Contains the following papers:

The types, modes of occurrence, and important deposits of asbestos in the United States, by J. S. Diller.

Dolomite for flux in the vicinity of Montevallo, Shelby County, Ala., by Charles Butts.

Graphite near Dillon, Mont., by A. N. Winchell.

Fluorspar near Deming, N. Mex., by N. H. Darton and E. F. Burchard.

Water-Supply Paper 237. The quality of the surface waters of California, by Walton Van Winkle and Frederick M. Eaton, in cooperation with the California Department of Engineering. 1910. 142 pp., 1 pl.

A description of the drainage of the State, with analyses and assays of surface waters and general conclusions regarding the adaptability of the waters of the several streams for various uses.

Water-Supply Paper 240. Geology and water resources of the San Luis Valley, Colorado, by C. E. Siebenthal. 1910. 128 pp., 13 pls., 15 text figures.

A comprehensive view of the geology of the San Luis Valley and the surrounding rim, with a description of the artesian basin, its development and its prospects, and information in regard to climate, agriculture, irrigation, and water resources.

Water-Supply Paper 246. Surface water supply of the United States, 1907–8: Part VI, Missouri River basin, prepared under the direction of M. O. Leighton by Robert Follansbee and J. E. Stewart. 1910. 311 pp., 13 pls., 2 text figures.

Water-Supply Paper 251. Surface water supply of the United States, 1907–8: Part XI, California, prepared under the direction of M. O. Leighton by W. B. Clapp and W. F. Martin. 1910. 363 pp., 7 pls., 1 text figure.

Water-Supply Papers 246 and 251 contain the results of stream measurements in the United States during the calendar years 1907 and 1908, continuing the Survey's series of reports on stream gagings. These papers give gage-height records, results of current-meter measurements, rating tables, and estimates of monthly discharges at stations maintained, on many streams.

Water-Supply Paper 253. Water powers of the Cascade Range—Part I, Southern Washington, by J. C. Stevens. 1910. 94 pp., 21 pls., 3 text figures.

The first of a proposed series of reports dealing with the water powers on rivers flowing from the Cascade Range in Washington and Oregon. The area treated in this paper comprises the drainage basins of Klickitat, White Salmon, Little White Salmon, Lewis, and Toutle rivers and is located in the southern extremity of the Cascade Range in Washington. Descriptions of the several drainage areas are given, together with profiles of the streams and principal tributaries, discharge data, and detailed statements of the water powers capable of being developed at the average minimum stage of the streams.

Water-Supply Paper 254. The underground waters of north-central Indiana, by Stephen R. Capps, with a chapter on the chemical character of the waters by R. B. Dole. 1910. 279 pp., 7 pls., 12 text figures.

A report on the quantity, quality, distribution, accessibility, and proper safeguarding of the ground-water supplies of the farming districts and manufacturing centers of north-central Indiana. Conditions in 378 cities and towns were investigated in its preparation. The paper includes the results of numerous analyses and assays. The chapter by Mr. Dole considers not only the mineral composition of the waters of the region but their value for domestic and industrial uses as well. Methods of purification are also discussed.

Water-Supply Paper 255. Underground waters for farm use, by M. L. Fuller, 58 pp., 17 pls., 27 text figures.

A brief report discussing the sources of farm water supplies with especial reference to their protection from contamination and their conservation. Describes many kinds of wells and tells what factors should govern the selection of a certain type. Contains numerous illustrations showing water-bearing formations and methods of sinking wells and raising water, and diagrams showing different well conditions.

Water-Supply Paper 256. Geology and underground waters of southern Minnesota, by C. W. Hall, O. E. Meinzer, and M. L. Fuller. 1911. 406 pp., 18 pls., 9 text figures.

A sketch of the physiography and geology of the region with special reference to the water-bearing capacity of the different geologic formations, detailed descriptions by counties of the underground-water resources, and a chapter on problems relating to wells. The illustrations include maps showing underground-water conditions, geologic sections in the different counties, and diagrams of well-drilling tools.

Water-Supply Paper 257. Well-drilling methods, by Isaiah Bowman. 1911. 139 pp., 4 pls., 25 text figures.

Designed for the needs of drillers and others interested in the development of underground resources. Describes the occurrence of oil and gas in different parts of the United States so as to enable drillers to select well sites with a definite idea of the rock formations that may be encountered. Gives a short account of the development of well construction and describes methods of drilling and boring in detail. The illustrations include well sections and cuts of the different devices and tools employed.

Water-Supply Paper 258. Underground-water papers. 1910. 123 pp., 2 pls., 32 text figures.

The fifth of a series of collections of papers that give brief accounts of investigations of special underground-water problems by the United States Geological Survey. Discusses some peculiar conditions affecting the economic value of wells and the occurrence of water in certain rocks of widespread occurrence. Contains the following papers:

Drainage by wells, by M. L. Fuller.

Freezing of wells and related phenomena, by M. L. Fuller.

Occurrence and composition of well waters in the slates of Maine, by F. G. Clapp.

Occurrence and composition of well waters in the granites of New England, by F. G. Clapp.

Pollution of underground waters in limestone, by G. C. Matson.

Protection of shallow wells in sandy deposits, by M. L. Fuller.

Composition of mineral springs in Maine, by F. G. Clapp.

Saline artesian waters of the Atlantic Coastal Plain, by Samuel Sanford.

Magnetic wells, by M. L. Fuller.

The utilization of the underflow near St. Francis, Kans., by H. C. Wolff.

Water-Supply Paper 260. Preliminary report on the ground waters of Estancia Valley, New Mexico, by Oscar E. Meinzer. 1910. 33 pp.

A brief report summarizing the geology of the district, the character of the soils, the source, disposal, recovery, and quality of its waters, and the prospects of improving conditions by irrigation.

Water-Supply Paper 262. Surface water supply of the United States, 1909; Part II, South Atlantic coast and eastern Gulf of Mexico, prepared under the direction of M. O. Leighton by M. R. Hall and R. H. Bolster. 1910. 150 pp., 5 pls.

Water-Supply Paper 263. Surface water supply of the United States, 1909: Part III, Ohio River basin, prepared under the direction of M. O. Leighton by A. H. Horton, M. R. Hall, and R. H. Bolster. 1911. 192 pp., 6 pls.

Water-Supply Paper 264. Surface water supply of the United States, 1909: Part IV, St. Lawrence River basin, prepared under the direction of M. O. Leighton by C. C. Covert, A. H. Horton, and R. H. Bolster. 1911. 130 pp., 5 pls.

Water-Supply Paper 265. Surface water supply of the United States, 1909: Part V, Hudson Bay and upper Mississippi River basins, prepared under the direction of M. O. Leighton by Robert Follansbee, A. H. Horton, and R. H. Bolster. 1911. 231 pp., 4 pls.

Water-Supply Paper 270. Surface water supply of the United States, 1909: Part X, The Great Basin, prepared under the direction of M. O. Leighton by E. C. La Rue and F. F. Henshaw. 1910. 192 pp., 5 pls., 1 text figure.

Water-Supply Papers 262 to 265, inclusive, and 270 contain descriptions of the drainage basins named and the results of stream measurements in them, namely, gage-height records, results of current-meter measurements, and daily and monthly discharges. Illustrations showing typical gaging stations, current meters, and rating curves accompany each book.

Mineral resources of the United States, calendar year 1909; 54 advance chapters, namely:

Summary of mineral production in the United States in 1909, compiled by W. T. Thom. 59 pp.

Metals and metallic ores in 1908 and 1909, by Waldemar Lindgren. 7 pp.

Iron ore, pig iron, and steel, by E. F. Burchard. 31 pp.

Movement of Lake Superior iron ore in 1909, by John Birkinbine. 7 pp. Contains a map showing distribution of the ores.

Manganese ore, by E. F. Burchard. 15 pp.

Gold and silver, by H. D. McCaskey. 33 pp.

Copper, by B. S. Butler. 34 pp.

Lead, by C. E. Siebenthal. 25 pp.

Zinc and cadmium, by C. E. Siebenthal. 24 pp.

Gold, silver, copper, lead, and zinc in the Western States and Territories (mine production), by A. H. Brooks, C. N. Gerry, V. C. Heikes, C. W. Henderson, H. D. McCaskey, Chester Naramore, and C. G. Yale. 275 pp.

Silver, copper, lead, and zinc in the Central States (mine production), by B. S. Butler and C. E. Siebenthal. 41 pp.

Gold, silver, copper, lead, and zinc in the Eastern States (mine production), by H. D. McCaskey. 17 pp.

Quicksilver, by H. D. McCaskey. 13 pp.

Bauxite and aluminum, by W. C. Phalen. 14 pp.

Antimony, arsenic, bismuth, and selenium, by F. L. Hess. 9 pp.

Tungsten, nickel, cobalt, vanadium, titanium, molybdenum, tantalum, uranium, and tin, by F. L. Hess. 16 pp.

Chromic iron ore, by E. F. Burchard. 5 pp.

Platinum and allied metals, by Waldemar Lindgren. 9 pp.

Coal, by E. W. Parker. 195 pp., 4 text figures.

Anthracite coal, by E. W. Parker. 12 pp.

Coal briquetting, by E. W. Parker. 17 pp.

Coke, by E. W. Parker. 57 pp.

Natural gas, by B. Hill. 36 pp.

Petroleum, by D. T. Day. 129 pp.

Petroleum operators' statistics of petroleum production, by D. T. Day. 10 pp.

Peat, by C. A. Davis. 6 pp.

Cement industry, by E. F. Burchard. 22 pp., 2 text figures.

Clay-working industries, by Jefferson Middleton. 67 pp.

Building operations, by Jefferson Middleton. 17 pp.

Glass sand, other sand, and gravel, by E. F. Burchard. 26 pp.

Sand-lime brick, by Jefferson Middleton. 7 pp.

Slate, by A. T. Coons. 14 pp.

Stone and lime, by E. F. Burchard. 51 pp.

Abrasive materials, by W. C. Phalen. 21 pp.

Fluorspar and cryolite, by E. F. Burchard. 8 pp.

Borax, by C. G. Yale. 4 pp.

Gypsum, by E. F. Burchard. 11 pp.

Lithium, by F. L. Hess. 7 pp.

Phosphate rock, by F. B. Van Horn. 7 pp.

Salt and bromine, by W. C. Phalen. 25 pp.

Sulphur and pyrite, by W. C. Phalen. 14 pp.

Barytes and strontium, by E. F. Burchard. 6 pp.

Mineral paints, by E. F. Burchard. 22 pp.

Asbestos, by J. S. Diller. 11 pp.

Asphalt, related bitumens, and bituminous rock, by D. T. Day. 5 pp.

Fuller's earth, by F. B. Van Horn. 6 pp.

Gems and precious stones, by D. B. Sterrett. 74 pp.

Graphite, by E. S. Bastin. 34 pp.

Magnesite, by C. G. Yale. 5 pp.

Mica, by D. B. Sterrett. 14 pp.

Mineral waters, by Samuel Sanford. 41 pp.

Monazite and zircon, by D. B. Sterrett. 11 pp.

Quartz and feldspar, by E. S. Bastin. 9 pp.

Talc and soapstone, by J. S. Diller. 11 pp.

Geologic Folio 172. Description and maps of the Warren quadrangle, comprising 222 square miles in Pennsylvania and New York, by Charles Butts. 1910. 11 folio pages of text, including 17 text figures, and geologic and topographic maps. Published also in octavo form, 80 pages of text, with 17 figures; maps in pocket.

Geologic Folio 174. Description and maps of the Johnstown quadrangle, comprising 228 square miles in Pennsylvania, by W. C. Phalen. Surveyed in cooperation with the Topographic and Geologic Commission of Pennsylvania. 1910. 15 folio pages of text, including 12 text figures, with columnar and structure section sheets and topographic and geologic maps. Published also in octavo form, 110 pages, 12 figures; maps in pocket.

Geologic Folio 175. Description and maps of the Birmingham quadrangle, comprising 992 miles in north-central Alabama, by Charles Butts. 1910. 24 folio pages of text, columnar and structure section sheets, geologic and topographic maps, 12 plates, 17 text figures. To be published also in octavo form.

Geologic Folio 176. Description and maps of the Sewickley quadrangle, comprising 227 square miles in west-central Pennsylvania, by M. J. Munn. 1911. 16 folio pages of text, a columnar-section sheet, 8 text figures, and 4 maps showing topography, geology, and occurrence of oil and gas. Published also in octavo form, 121 pages, 8 figures; maps in pocket.

Geologic Folio 177. Description and maps of the Burgettstown and Carnegie quadrangles, comprising 455 square miles in Pennsylvania, by E. W. Shaw and M. J. Munn. 1911. 16 folio pages of text, columnar and well section sheets, geologic and topographic maps, and 10 text figures. To be published also in octavo form.

Topographic maps as follows:

Abingdon, Va.–Tenn.–N. C.[1]
Antelope, Cal.
Antrim, Ohio.
Antwerp, N. Y.
Arcade, Cal.
Barrett, Minn.
Bath, N. Y.
Bouldin, Cal.
Bruceville, Cal.
Butler, Pa.
Calumet special, Mich.
Carlyle, Ill.
Circle, Alaska.
Clay City, Ind.
Coahoma, Miss.
Columbiana, Ala.
Covington, Ohio.
Crater Lake National Park.[1]
Danforth Hills, Colo.
Dawson Springs, Ky.
Dundee, Miss.
Eaton, Colo.
Ellijay, Ga.–N. C.–Tenn.[1]
Ellsworth, Me.
Emmittsburg, Md.–Pa.
Fayetteville, W. Va.
Fond du Lac, Wis.
Fort Bayard special, N. Mex.
Fowlerville, Mich.
Frazeysburg, Ohio.
Frisco special, Utah.[1]
Fryeburg, Me.–N. H.
Galt, Cal.
Greenwood Lake, N. J.–N. Y.[1]
Hardinville, Ill.
Hawthorne, Nev.–Cal.
Headreach, Cal.
Hennepin, Ill.[1]
Herman, Mich.
Jersey, Cal.
Jonestown, Miss.
Knights Landing, Cal.
La Salle, Ill.[1]
Leadville special, Colo.
Leavenworth, Kans.
Lincoln, Cal.
McComb, Okla.
McConnelsville, Ohio.
Macon, Mo.
Marcuse, Cal.
Meadows, Idaho.
Monticello, N. Y.
Montevallo, Ala.
Mount Vernon, Wash.
Murphysboro, Ill.
Neenah, Wis.
Neversink, N. Y.
New Hope, Cal.
New Kensington, Pa.
New Lexington, Ohio.
Nicolaus, Cal.
Okawville, Ill.
Parker, Ariz.–Cal.
Peytona, W. Va.
Philo, Ohio.
Pikeville special, Tenn.
Prince Frederick, Md.
Princeton, Ky.
Pullman, Wash.–Idaho.
Quincy, Wash.
Ramapo, N. Y.–N. J.[1]
Red Rock, Wash.
Rio Vista, Cal.
Roseville, Cal.
San Marcos, Tex.
Sheridan, Cal.
Sheridan, Wyo.–Mont.
Southern California No. 3.
Sutton special, W. Va.
Taneytown, Md.–Pa.
Uncompahgre, Colo.
U. S. base, 8 by 12½ inches.
U. S. base, 49 by 76 inches.[1]
Vernon, Cal.
Walnut Lake, Miss.
Wheatland, Cal.
Winchester, Wash.
Winnebago special, Wis.
Woodbridge, Cal.
Zelienople, Pa.

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[1] New editions.

## FIELD WORK BY THE DIRECTOR.

The Director did not make the usual inspection visits to field parties in the summer of 1910 for the reason that he attended the International Geological Congress held in Stockholm, Sweden, which afforded opportunity for conference with the administrative officers of the official geological surveys of other countries. The Director also visited the French Army Geographic Service, which makes the official topographic surveys, and the office of the Geological Survey of Great Britain. The delegation representing the United States Geological Survey at the Stockholm congress included also Messrs. Emmons, Hague, Becker, Lindgren, and Cross.

In November the Director visited the California oil fields with a view of ascertaining present conditions and made a report on the results to the Secretary of the Interior, urging remedial legislation. In May and June, 1911, in company with a geologist and an engineer, he made a preliminary examination of the two forest tracts in Georgia and Tennessee, on which favorable reports were afterwards submitted to the Secretary of Agriculture for the use of the National Forest Reservation Commission.

## GEOLOGIC BRANCH.

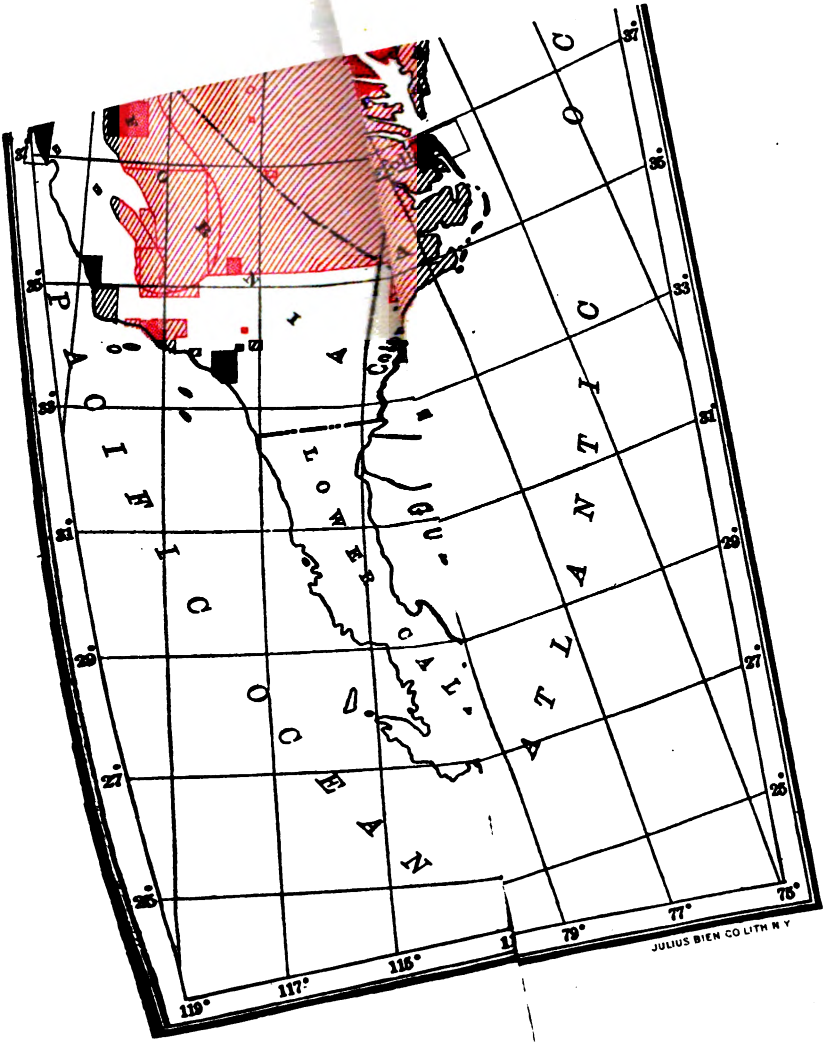
### ADMINISTRATION.

The geologic branch embraces four divisions—(1) geology, C. W. Hayes in charge; (2) Alaskan mineral resources, A. H. Brooks in charge; (3) mineral resources, E. W. Parker in charge; and (4) chemical and physical research, G. F. Becker in charge.

The chief geologist, C. W. Hayes, has general supervision of the work of the geologic branch, and the divisions composing the branch cooperate effectively in the several lines of work which are being carried on. Members of one division are employed in the work of another whenever it seems desirable, and such transfer is easily effected. The statistical reports of the division of mineral resources are for the most part prepared by geologists, who are detailed to the work from the division of geology for a portion of the year.

### PUBLICATIONS.

The publications of the year prepared in the geologic branch included 5 geologic folios, 1 professional paper, 19 bulletins, and the annual volumes on mineral resources. Besides these publications a considerable number of papers were, with the permission of the Director, published in scientific journals and in the transactions of scientific societies. Such publications are ordinarily restatements


PACIFIC OCEAN
ATLANTIC OC
LOWER CAL.
GU
Col.
37°
35°
33°
31°
29°
27°
25°
119°
117°
115°
79°
77°
75°
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of results in a more technical form, and are usually prepared by members of the Survey without compensation. Some original matter obtained incidentally during the course of the work and not appropriate for official reports has also been made the subject of unofficial publications.

The progress of geologic mapping during the year is shown on Plate I.

## DIVISION OF GEOLOGY.

### ORGANIZATION.

The scientific force at the beginning of the year consisted of 54 geologists, 58 assistant geologists, and 11 junior geologists. During the year there were 4 resignations, 1 death, and 39 appointments, resulting in a net gain of 34, the total being 157 at the end of the year. Of the total number, 92 were continuously employed, 37 carried on the per diem roll gave only a portion of their time to Survey work, and 33 were not employed during the year. In addition to the regular force 15 field assistants were employed for a portion of the year.

The work of the division is organized under a number of sections, as follows:

Areal and structural geology, Arthur Keith in charge
Paleontology and stratigraphic geology, T. W. Stanton in charge.
Economic geology, metalliferous ores, Waldemar Lindgren in charge.
Economic geology, nonmetalliferous minerals, F. B. Van Horn in charge.
Economic geology, fuels, M. R. Campbell in charge.
Land-classification board, W. C. Mendenhall in charge.

The section chiefs have direct supervision, both in the field and in the office, of the work in their sections and are directly responsible for maintaining efficiency and a high scientific standard.

### FIELD WORK OF THE CHIEF GEOLOGIST.

The administrative duties of the chief geologist are such as to prevent him from carrying on systematic field work. His work outside of the office, therefore, consists chiefly of field conferences for determining questions in dispute and for planning future work.

During November, 1910, the chief geologist was temporarily assigned to the War Department to procure data relating to the geologic conditions in the Canal Zone, and especially in the Culebra cut, for the use of the President. He made a study of the causes of landslides and other failures in the sides of the cut and of means for their prevention, and submitted to the Secretary of War a report on the subject, embodying conclusions and recommendations. A summary statement of the results of the work was included in the

President's message to Congress. As a result of recommendations contained in the chief geologist's report the Isthmian Canal Commission in December applied to the Survey for a geologist to make a thorough geologic study of the Culebra cut and of the Canal Zone generally. Assistant Geologist D. F. MacDonald was selected for the work, and in January was assigned to the Canal Commission and reported for duty to the chairman and chief engineer.

In March the chief geologist made a visit to southern Utah to determine the geologic relations of certain potash-bearing minerals reported to occur there. In May he attended a field conference with several Survey geologists in the Ducktown copper district, Tennessee, and another in Vermont in relation to certain disputed points in the geologic structure near Brandon.

The chief geologist was out of the United States for two months during the year, on leave without pay.

### WORK OF THE CHIEFS OF SECTIONS.

*Section of areal and structural geology.*—The work of Arthur Keith has been, for the most part, of an administrative character, consisting mainly of conferences with other geologists and supervision and inspection of results in areal and structural geology, both in the field and in the office. Much of this work comes in connection with the geologic folios, in which responsibility for form and adequate treatment rests on Mr. Keith. The attainment of harmony and unity in the folios requires frequent conferences on all matters treated in them. Such conferences are also necessary for the maps and descriptions in reports dealing with areal geology, which form a large part of the survey publications.

A great deal of Mr. Keith's time has been devoted to service on committees, including those on geologic names, illustrations, plans, and maps. The largest single element of the committee work has been that on geologic names, under his chairmanship.

Maps submitted for folio publication of the following quadrangles were inspected: Boston, Marlboro, Greylock, Mass.; Taconic, Mass.-Vt.; Ellijay, Ga.; Ducktown, Tenn.; Frostburg, Md.

Field conferences were held by Mr. Keith with the geologists responsible for the areal geology in the following quadrangles: Sheffield, Pittsfield, Boston, Mass.; Peterboro, N. H.; Brandon, Vt.; Dahlonega, Ga.; Ducktown, Tenn.

Mr. Keith made a review of the areal geology of the Cowee and Kings Mountain quadrangles (N. C.), and continued, with D. B. Sterrett, the joint study of the areal geology of the Gaffney quadrangle (S. C.).

Special investigations were continued by Mr. Keith into the faulted structure of Hoosac Mountain, in the Greylock and Becket quadrangles, Mass. In association with L. M. Prindle, Mr. Keith made a special study of the subdivisions of the Cambrian and Ordovician strata in the northeastern part of the Hoosick quadrangle (N. Y.-Vt.) and the adjoining corner of the Cambridge quadrangle (N. Y.).

Reconnaissances were made by Mr. Keith in the following quadrangles: Dover, N. H.; Framingham, Mass.; Winston Salem, N. C.; Abbeville, S. C.; Suwanee and Atlanta, Ga.

The greater portion of Mr. Keith's office time was occupied with investigations and discussions in connection with geologic folios. The descriptive texts of eight folios in course of preparation were critically read, and the structural geology and areal mapping of these and many others were specially considered. In the editorial work Mr. Keith was assisted in the last half of the year by Laurence La Forge.

Numerous papers presented for publication by the Survey were critically read, and the geologic maps for Survey reports were examined. The scheme of separate representation on a single map of the faunal and lithologic elements involved in a geologic formation, which was proposed by Mr. Keith three years ago, is now being carried out in some of the folios and other publications of the Survey.

*Section of paleontology and stratigraphic geology.*—T. W. Stanton was absent from Washington on field duty from July 6 to October 1, 1910. His field studies were made mostly in cooperation with geologic parties engaged in areal and land-classification work in the coal and phosphate fields of the Rocky Mountain region, their main object being to gain personal detailed knowledge of the stratigraphic sections and to collect paleontologic evidence for use in correlation and definition of formations. The areas visited were Vermejo Park, N. Mex.; the Canon City coal field (Colo.) with W. T. Lee; the Apishapa quadrangle (Colo.) with G. W. Stose, for the purpose of identifying the Comanche series; the Colorado Springs and Denver areas (Colo.) with G. B. Richardson; Newcastle, Wyo.; a large area in eastern Wyoming, covered by wagon reconnaissance with A. R. Schultz, to visit parties under J. A. Davis near the Montana line, V. H. Barnett southeast of Gillette, D. E. Winchester near Douglass and the Lance Creek area, and C. H. Wegemann on the upper Powder River and in the Salt Creek oil field; Columbus, Mont., and the region to the north with W. R. Calvert and F. H. Knowlton; and the phosphate field of southeastern Idaho with R. W. Richards.

All of Mr. Stanton's time in the office has been occupied in the usual routine work, including the examination of the numerous current collections of fossils and the preparation of reports on them for the use of geologists, committee work, reading of referred manuscripts, and other administrative duties connected with the supervision of the section of paleontology and stratigraphy and the preservation and classification of the collections. Under the last item, with the assistance of T. E. Willard, nearly all the large collections of Mesozoic invertebrates which were recently moved into the new building of the National Museum have been classified and arranged in cases so that they are easily accessible for study or quick reference.

*Section of economic geology, metalliferous ores.*—During the early part of July Waldemar Lindgren was engaged chiefly in administrative work in connection with the section of metalliferous deposits and paid a brief visit to Ducktown, Tenn., to inspect the geologic work there in progress. From July 23 to September 14 he was in attendance at the Eleventh International Geological Congress in Sweden. After his return he was engaged in administrative work for the division of mineral resources and for the section of metalliferous deposits, his time being about equally divided between the two. From December 1 to 22 he was on leave without pay, lecturing at the Massachusetts Institute of Technology. On his return he was occupied chiefly with administrative duties, except during about one week, which was devoted to a report on the Republic district, Washington. On May 19 he proceeded to Arizona, where he examined mines at Bisbee and inspected geologic work in the Tucson quadrangle. He spent the greater part of June in a geologic study of the new district at National, Nev. During the year he compiled and submitted for publication a report on the production of platinum in 1909.

*Section of economic geology, nonmetalliferous minerals.*—During the first half of the year F. B. Van Horn was occupied by administrative duties in Washington. From February 16 to March 10 he was in Florida and South Carolina, and from April 3 to April 14 in Tennessee and Arkansas, studying the occurrence and methods of mining of the phosphate deposits of those States. The rest of the year he spent in administrative work, mainly for the geologic branch, and as acting chief geologist.

Plans were formulated for a systematic search for commercial deposits of potash in this country. The appropriation for this work was not available until July 1, 1911, but it was thought desirable to do as much as possible toward getting the work well under way. As a result sites have been selected which appear most favorable for the accumulation of potash deposits, and drilling will be commenced very early in the new fiscal year.

Mr. Van Horn also prepared reports on the production of phosphate rock in 1909 and 1910 for publication in the volume "Mineral Resources."

*Section of economic geology, fuels.*—As in previous years, the work on fuels was in charge of M. R. Campbell, who divided his time between the field and the Washington office.

Mr. Campbell left Washington July 12, 1910, going first to the Yellowstone National Park to see if it was possible to prepare a popular description of the natural features of this park. This work was interrupted by a request from the Interior Department that Mr. Campbell should accompany C. S. Ucker, chief clerk, in an official trip of inspection through the new Glacier National Park. This trip extended from July 28 to August 9.

After a brief trip to Denver to attend to administrative duties, Mr. Campbell, at the request of Mr. Ucker, returned to the Glacier National Park to make an examination of mineral claims in the park. Forest fires prevented field work from August 18 to August 28, but active service began on the latter date and continued to October 3. Mr. Campbell visited parties engaged on coal work in the vicinity of Grand Junction, Colo., and then proceeded east, reaching Washington October 19, 1910.

In order to obtain information regarding reported coal fields on the Pacific coast of Mexico, Mr. Campbell made a hasty trip to the States of Sonora and Sinaloa, returning to Washington November 22, 1910.

During the winter the results of the field examinations were compiled in the office. This work involved the preparation of geologic maps of township plats showing the classification and valuation of the coal and oil lands examined, of special reports on the geology and economic resources of certain regions, and of the annual volume "Contributions to economic geology, Part II," which was submitted for publication.

Mr. Campbell left Washington June 6, 1911, to begin a study of the general geology of the Glacier National Park. After outfitting at Belton, Mont., he continued field work to the end of the present fiscal year.

*Subsection of fuels east of meridian 97°.*—In addition to supervising the work of the survey on the coal fields of Alabama, Tennessee, Illinois, and Missouri, David White made paleobotanic field examinations in the western Kentucky coal field, the Cherokee series of southern Iowa, the Cahaba Basin of Alabama, and the "Red Beds" of Oklahoma and Texas, the object of the work in the area last named being to obtain evidence as to the age of the rocks supposed to be near the horizon of the Wreford limestone of Kansas. Preliminary results of the work on the "Red Beds" have been reported in unofficial publications. Mr. White's other paleobotanic studies have been limited to those necessary for informal reports and correlations based on current collections submitted by Survey geologists.

The microscopic investigations of coals undertaken by the technologic branch of the Geological Survey to ascertain the relation of the kinds of plant material forming coals and the state of its preservation to the chemical qualities and economic value of the coals have passed out of the hands of the Geological Survey since the organization of the Bureau of Mines, but by request of that bureau the supervision of this work was continued in Mr. White's charge. Mr. White's connection with this work, however, was terminated in June, 1911, by his submission of manuscripts discussing the local geologic relations of the coals examined, the general physiographic conditions attending the formation of the great coal beds, and the part played by metamorphism in the development of coals of different grades, the whole matter constituting his part of a report to be published by the Bureau of Mines.

### GEOLOGIC WORK IN NEW ENGLAND STATES.

A small amount of geologic work was done in Maine in continued cooperation with the State, $350 being spent by each Survey. Office work on the Eastport folio was continued by E. S. Bastin, who was assisted during the fall of 1910 by C. L. Breger. The office work on the maps and text has been carried as far as it can be until further paleontologic work is completed.

Mr. Breger left the survey December 31, 1910, when the paleontologic work in Maine was taken over entirely by H. S. Williams, under whose general direction Mr. Breger had been working. Prof. Williams has been engaged on the systematic determination and description of the large collections of fossils from the Eastport quadrangle and other portions of Maine. Work was continued on the preparation of the Mount Desert folio by C. W. Brown.

The final maps and text of the geologic folio covering the Ware quadrangle, Massachusetts, have been completed and submitted for publication by B. K. Emerson. Prof. Emerson has also completed the final revision of the geologic map of Massachusetts and Rhode Island on the scale of 4 miles to the inch.

In the northeastern part of the Hoosick quadrangle (Mass.-N. Y.) and the adjoining part of the Cambridge quadrangle (N. Y.-Vt.) special studies were carried on by L. M. Prindle and Arthur Keith in order to subdivide the Cambrian and Ordovician formations and to determine the structural relations of the region. Preliminary maps covering this work have been prepared by Mr. Prindle.

The preparation of the manuscript for the Housatonic (Mass.) folio by Joseph Barrell, in association with B. K. Emerson and T. N. Dale, is well advanced.

A folio covering the Boston and Boston Bay quadrangles has been in preparation for a number of years by members of the geological departments of Harvard University and the Massachusetts Institute of Technology. The completion of the folio was assigned to Laurence

La Forge and during the year the field work was finished; the office work on the folio is now well advanced. Although many facts concerning the geology of this region were known it was necessary for Mr. La Forge to cover the ground practically anew.

The marble quarries of Vermont have been examined by T. N. Dale, who has collected material for the preparation of an economic report on the marble belts of the western part of the State. Mr. Dale also prepared a supplementary report on the commercial granites of Massachusetts, to be published in Bulletin 470, and, together with H. E. Gregory, a report on the granites of Connecticut (Bulletin 484).

In addition to performing his duties as geologist in charge of the section of areal and structural geology, Arthur Keith devoted considerable time during the year to the study of some of the more obscure and complicated problems of New England geology. Among these are the structure of Hoosac Mountain and the Berkshire Hills, in Massachusetts; the age of the metamorphosed gneisses and schists northeast of Worcester, Mass.; the age of the quartzite and schist bodies west of the Boston Basin; and the stratigraphy of the district between Newburyport, Mass., and Portsmouth, N. H.

### WORK IN NORTHERN APPALACHIAN REGION.

Several years ago G. K. Gilbert surveyed the Niagara Falls quadrangle in connection with his study of the history of the falls, but was unable to prepare the folio for publication. The completion of this work was assigned to E. M. Kindle and F. B. Taylor, Mr. Kindle taking the geology of the hard rocks and Mr. Taylor the Pleistocene deposits and the physiography of the region. Necessary additional field work was completed and the preparation of the folio is well advanced.

In continuation of a cooperative agreement with the State Geological Survey of New Jersey, the Survey's work on the Greenwood Lake-Ramapo folio was completed by W. S. Bayley. The discussion of the Paleozoic and later geology for this folio is being prepared by State geologist H. B. Kümmel. The manuscript of the descriptions of the pre-Cambrian rocks for the Delaware Water Gap folio has also been completed by Mr. Bayley, and Mr. Kümmel will prepare a description of the geology of the later formations on the New Jersey side of Delaware River. This work completes the mapping and description of the Paleozoic and pre-Cambrian formations of New Jersey.

The preparation of the text for folios on the Reading and Boyertown and the Honeybrook and Phoenixville quadrangles, in eastern Pennsylvania, was continued by Florence Bascom. Miss Bascom also completed a survey and petrographic study of the volcanic rocks of the Fairfield, Gettysburg, and Carlisle quadrangles and made progress in the preparation of the text and description of these rocks for the Fairfield-Gettysburg folio, by G. W. Stose and Florence Bascom.

Work on the coal fields in Pennsylvania, prosecuted in cooperation with the State, has for the most part been confined to the preparation of reports on quadrangles previously studied. The folio manuscripts for the Hollidaysburg and the Barnesboro and Patton quadrangles were revised and completed by Charles Butts. On account of the intimate connection between the complex stratigraphic problems of the Hollidaysburg quadrangle and those of the adjacent Bellefonte quadrangle, now under study, further steps in the preparation and publication of the Hollidaysburg folio are temporarily postponed. Progress on the Punxsutawney, Houtzdale, and Curwensville folios, by G. H. Ashley, and on the Newcastle folio, by F. W. De Wolf, has been delayed by their duties as State geologists of Tennessee and Illinois, respectively, but it is confidently expected that the Punxsutawney and Newcastle folios will be submitted by the authors during the current year.

The Warren, Johnstown, Sewickley, and Burgettstown-Carnegie folios have been published, as also has a bulletin (No. 447) on the "Mineral resources of Johnstown, Pa., and vicinity." The Foxburg-Clarion folio was in press at the close of the year. The bulletin on the "Geology of the oil and gas fields in the Sewickley quadrangle," submitted by this Survey to the Topographic and Geologic Survey Commission of Pennsylvania in 1908 for publication, has recently been published by the State.

An arrangement was made with Prof. E. S. Moore, of Pennsylvania State College, for the survey of the Bellefonte quadrangle and the preparation of the geologic folio. It is expected that this folio will be submitted for publication during the coming year.

The manuscript for the Frostburg - Flintstone (Md.) folio, by G. W. Stose and C. K. Swartz, was submitted for publication, in cooperation with the Maryland Geological Survey.

### WORK IN SOUTHERN APPALACHIAN REGION.

M. J. Munn has practically completed the field work for a report on the oil and gas fields of eastern Kentucky, in cooperation with the State Survey, and has submitted preliminary reports on the Campton oil field and on the oil and gas developments of Knox County, Ky., for publication in Bulletin 471.

Some additional field work was done by W. C. Phalen on the Kenova quadrangle (Ky.), and the folio has been submitted for publication.

Field work was carried on by G. W. Stose in the Abingdon quadrangle, in southern Virginia, and progress was made in the preparation of a geologic folio. The Cambrian and older rocks in about half of the quadrangle had already been surveyed by Arthur Keith, but the completion of the work was delayed pending topographic revision. Mr. Stose gave special attention to the examination of deposits of salt, gypsum, and iron in this area.

In Tennessee the survey of the Pikeville special quadrangle, in cooperation with the State, was nearly completed by W. C. Phalen, assisted by Henry Hart, of the Tennessee State Survey. A preliminary report by Mr. Phalen on the coal resources of the quadrangle has been submitted for publication by the State. In June, 1911, work was resumed on the Pikeville folio by Charles Butts, and a special study of the paleontology and stratigraphy of the region was undertaken by George H. Girty.

In cooperation with the State Survey a preliminary report on the oil and gas developments in Tennessee was prepared by M. J. Munn and published by the State Survey.

A detailed study has been made of the copper deposits at Ducktown, Tenn., and the areal and structural geology of the Ducktown special area. W. H. Emmons and F. B. Laney were associated in this work, Mr. Emmons studying especially the ore deposits and Mr. Laney the geology of the district. A brief paper on the ore deposits has been prepared by Mr. Emmons and Mr. Laney for publication in Bulletin 470 and also by the State Survey. A full report embodying the results of the investigation is nearly completed.

M. J. Munn made a reconnaissance examination of the Fayette gas field, Alabama, in cooperation with the Alabama Geological Survey, and has prepared a report for publication by the State. He has also prepared a briefer paper on this field for publication in Bulletin 471.

The survey of the Bessemer quadrangle (Ala.) was completed by Charles Butts for folio publication. From December to May Mr. Butts was occupied in office work in preparing reports on iron, marble, and dolomite of the Bessemer region for publication in Bulletin 470.

A report on the coal of the Dan River field (N. C.), based on a brief field examination made near the close of the previous fiscal year, has been submitted by R. W. Stone.

The areal and economic survey of the Gaffney and Kings Mountain region (N. C.–S. C.) was continued by Arthur Keith and D. B. Sterrett, and that of the Gaffney quadrangle was completed as far as the field surveys have gone.

The revision of the areal mapping of the Cowee quadrangle (N. C.) was completed by Mr. Keith and Mr. Sterrett. A report on the economic deposits of the Cowee quadrangle was prepared by

Mr. Sterrett, and the Cowee areal map for the folio was completed by Mr. Keith.

A reconnaissance of the Lincolnton quadrangle (N. C.) was made by Mr. Sterrett, and one of the Winston-Salem (N. C.), Abbeville (S. C.), and Suwanee and Atlanta (Ga.) quadrangles by Mr. Keith.

The areal and economic survey of the Dahlonega quadrangle (Ga.) was continued by F. B. Laney, the mapping for the northern half of the quadrangle being completed. In connection with this work Mr. Laney revised the areal mapping of the gneisses in adjoining parts of the Ellijay quadrangle (Ga.). The office work on the Dahlonega map was completed by Mr. Laney for the area covered in the field. The manuscript for the Ellijay folio has been submitted by Laurence La Forge for publication.

### WORK IN ATLANTIC AND GULF COASTAL PLAIN.

In cooperation with the State geological surveys, a systematic study of the Atlantic and Gulf Coastal Plain was continued throughout the year. The work was carried on under the general supervision of T. W. Vaughan, who personally inspected several critical localities. W. B. Clark continued in immediate charge of the Coastal Plain work north of and including North Carolina, and Mr. Vaughan has immediate charge of the work in the remainder of the Coastal Plain.

Work was continued by W. B. Clark and his assistants on the State Survey in preparation of folios on the Coastal Plain of Maryland. This work is done in cooperation between the Federal and State surveys, and the manuscript for the Choptank folio, by B. L. Miller, was submitted for publication.

Field work was continued in western Florida and southern Alabama and Mississippi by G. C. Matson. Mr. Matson was for several months employed by the General Land Office to examine and classify public lands in Florida with reference to their value as phosphate lands.

L. W. Stephenson continued investigations of the Cretaceous rocks of the Coastal Plain in Alabama, Mississippi, Tennessee, Kentucky, Illinois, and Arkansas. During the year he completed reports on the stratigraphy of the Cretaceous deposits of Georgia and on the underground waters of the Cretaceous of Georgia. Mr. Stephenson also submitted two memoirs for publication as a professional paper—one on the Cretaceous deposits of the eastern Gulf region and the other on the species and varieties of Exogyra from the eastern Gulf region and the Carolinas.

Systematic investigations of the fossil plants found in the Tertiary and Cretaceous formations of the Coastal Plain were continued during the year by E. W. Berry. Field work was done in Georgia, Florida, Alabama, Mississippi, and Arkansas. In addition to this field work and the work of preparing reports on collections made by him and others, Mr. Berry has completed the manuscript for a bulletin on the Upper Cretaceous floras of South Carolina.

The study of the central Coastal Plain of Texas was continued by Alexander Deussen, who made reconnaissance surveys of Comal, Guadalupe, Gonzales, Dewitt, Victoria, and Calhoun counties. Analyses were made of 62 samples of water from typical wells in this region. Mr. Deussen also completed a short report on the clays of Texas for publication in Bulletin 470.

### WORK IN CENTRAL STATES EAST OF MERIDIAN 97°.

In Illinois geologic investigations were continued under the cooperative agreement with the State, by which the results obtained by each Survey are made available for the use of the other. For the Federal Survey E. W. Shaw mapped the geology of the Tallula quadrangle and of one-half of the Illinois portion of the Galena and Elizabeth quadrangles. He also reviewed the Quaternary geology and physiography of several quadrangles previously surveyed in the southern part of the State. In the course of geologic work in southern Illinois during the last two years Mr. Shaw has worked out evidence of a new system of extinct lakes and has followed the lake beds southeastward as far as Madisonville, Ky. Mr. Shaw prepared a report on these lakes and transmitted it to the State Survey. In cooperation with members of the State Survey, Mr. Shaw prepared texts for the Murphysboro-Herrin and Tallula-Springfield folios. A report on the coal of the Springfield district was nearly completed and a general geologic report on the Belleville and Breese quadrangles was put in the form of a folio text. A paper on the clay resources of the Murphysboro quadrangle was prepared for publication in Bulletin 470. For the State Survey A. C. Trowbridge mapped the remaining areas in Illinois in the Galena and Elizabeth quadrangles, and U. S. Grant and G. H. Cady surveyed the greater part of the La Salle and Hennepin quadrangles. The results of Mr. Trowbridge's work will be published jointly with those obtained by Mr. Shaw. Messrs. Grant and Cady are preparing the La Salle-Hennepin folio, which will be furnished to this Survey by the State.

In cooperation with the State Geological Survey of Missouri, a survey of the coal fields of the State was begun, the work being placed in charge of Henry Hinds, of the Federal Survey, assisted by F. C. Greene, of the State Survey. The field investigations that will serve as the basis for economic reports on the coal resources and the geologic structure of the coal fields of the State are approaching completion.

Additional work was done in July and August by C. E. Siebenthal in the Joplin lead and zinc district (Mo.) for the purpose of studying the deeper ore deposits in this district. At the same time Mr. Siebenthal revisited the Wyandotte quadrangle (Okla.) and brought up to date the notes on the mining geology, preparatory to writing the Wyandotte report and folio.

In Arkansas A. H. Purdue, assisted by H. D. Mizer, made a reconnaissance from the Hot Springs special quadrangle, the survey of which was completed last year, westward to the Caddo Gap quadrangle, for the purpose of connecting the two areas and correlating their stratigraphy. After completing this reconnaissance, Mr. Mizer devoted the remainder of the season to the areal mapping of the northern or mountainous portion of the De Queen quadrangle. The manuscript for the Eureka Springs-Harrison folio was completed and submitted for publication, and preparation of the Caddo Gap folio was advanced.

Some additional field work in the Lake Superior iron districts was undertaken during the year by C. K. Leith and W. J. Mead, under the direction of C. R. Van Hise. The results of this work were incorporated in the monograph on the Lake Superior region (Monograph LII), which is in press and will be published in October, 1911. The results of practically all exploratory work by the mining companies is placed at the disposal of Mr. Van Hise and his associates, so that the conclusions regarding the structure of the region and the distribution of the formations embody the best information obtainable.

The detailed study and areal mapping of the Pleistocene formations of southeastern Wisconsin has been completed by W. C. Alden northward to latitude 44°. In addition, during the last season, he surveyed portions of Manitowoc, Calumet, Winnebago, Waushara, Adams, and Juneau Counties. In the office Mr. Alden has nearly completed the manuscript for a professional paper covering the results of his work in southeastern Wisconsin.

The investigation of the Pleistocene geology in northern Michigan and adjacent portions of Wisconsin and Minnesota was continued by Frank Leverett, with the assistance of F. W. Sardeson. The State surveys of Wisconsin and Michigan cooperated to some extent in this work. Field work in northern Michigan was completed by Mr. Leverett, with the assistance of I. D. Scott, of the State Survey, and the map and report on the Northern Peninsula of Michigan, for publication by the State Survey, were completed. The monograph on the Pleistocene geology of Indiana and Michigan was completed by Mr. Leverett in association with F. B. Taylor.

## WORK IN THE WESTERN PUBLIC-LAND STATES AND TERRITORIES.

*Central States west of meridian 97°.*—N. H. Darton spent some months of the field season of 1910 in the Black Hills of South Dakota, mapping the pre-Cambrian rocks in the northern portion of the Deadwood quadrangle. He also adjusted the boundaries of several sedimentary formations in the Sturgis, Spearfish, and Rapid quadrangles and prepared portions of the text and maps for the Deadwood-Rapid folio. On October 15, Mr. Darton was transferred to the Bureau of Mines as geologist in that bureau. This transfer terminated his connection with the Geological Survey, a connection covering nearly 25 years.

Work was begun in June by Sidney Paige on the pre-Cambrian rocks of the Harney Peak quadrangle (S. Dak.) for folio publication.

The manuscript for the Bismarck (N. Dak.) folio has been submitted by A. G. Leonard for publication in cooperation with the State survey.

Progress has been made in preparing the Rapid-Deadwood (S. Dak.) folio, by N. H. Darton and Albert Johannsen.

At the time of the resignation of J. A. Taff from the Geological Survey (October 31, 1909) to accept employment as geologist in California, he had surveyed a number of quadrangles in Oklahoma, but had not completed the folios. The work of preparing these folios was assigned to C. D. Smith, who had acted as Mr. Taff's assistant and who was sent to California in order that he might readily confer with Mr. Taff concerning the work. Mr. Smith made considerable progress toward the completion of these folios. An arrangement was made with the State Survey of Oklahoma for cooperation in the survey of the Nowata quadrangle. The field work was three-quarters done by D. W. Ohern under the supervision of Mr. Smith, and was completed in the spring of 1911 by Mr. Smith, assisted by R. H. Wood. During the last three months of the year Mr. Smith has been engaged in surveying the Claremore quadrangle. This work is also being done in cooperation with the State and is practically completed.

*Rocky Mountain region.*—Work in the San Juan region, Colo., which has for several years been in charge of Whitman Cross, was continued by E. S. Larsen, jr., Mr. Cross being absent from the country attending the International Geological Congress at Stockholm. The survey of the San Cristobal quadrangle was practically completed by Mr. Larsen and some work was done on the Cebolla quadrangle. During the office season both Mr. Cross and Mr. Larsen continued the preparation of reports on the San Juan region.

During the year a systematic detailed study of the physiographic history of the San Juan district, with the areal mapping of the Quaternary deposits, was undertaken by W. W. Atwood, assisted by K. F. Mather. Mr. Atwood completed the areal work for the Durango quadrangle and half of the La Plata quadrangle. He also made excursions into the higher mountains and to the southwest, over the adjoining plateaus, for comparative studies. This work is being carried on in close association with the studies of Whitman Cross and assistants on the geology of the older rock formations. The execution of the comprehensive plan adopted will require several years of field and office work.

The Apishapa quadrangle, in central Colorado, was mapped geologically several years ago by G. K. Gilbert, who was, however, unable to complete the folio for the quadrangle. Later the base map was improved and the geologic mapping was revised by G. W. Stose. The revision consisted chiefly of the mapping of a newly recognized Cretaceous formation. The folio covering this quadrangle is well advanced.

The mapping of the Deming quadrangle (N. Mex.) was completed by N. H. Darton. This work was begun several years ago in connection with studies of underground waters.

The bulletin on the Shinumo quadrangle (Ariz.), including an interesting portion of the Grand Canyon, has been completed by L. F. Noble, who has also completed a description of the Bright Angel quadrangle (Ariz.) to be printed on the back of the topographic sheet.

The manuscript for the Colorado Springs (Colo.) folio has been submitted by G. I. Finlay.

In New Mexico the Silver City quadrangle was surveyed by Sidney Paige, assisted by J. L. Rich, and the geologic folio was nearly completed. In addition to studies of the areal and structural geology, investigations were made of a number of mining districts in the quadrangle and several reports were prepared for publication in Bulletin 470. The quadrangle contains the Santa Rita mining district for which a special topographic map has been prepared. Detailed study of this mining district was not included in the work of Mr. Paige.

In connection with the investigation of underground waters by the Indian Office a geologic reconnaissance was made of the northwestern part of the Navajo Indian Reservation in Arizona and Utah by H. E. Gregory, assisted by J. E. Pogue. This was in continuation of work of the same character carried on during the preceding year.

During the summer of 1910 a beginning was made in the survey of the Glacier National Park in Montana by M. R. Campbell. Owing to the extensive forest fires the work was greatly impeded. In June, 1911, Mr. Campbell resumed field work in this park accompanied by W. C. Alden, who will make a special study of the Pleistocene deposits and glacial phenomena of the region.

*Classification of mineral lands.*—The study of the areal distribution and structure of the phosphate deposits in the northern Rocky Mountain region was continued during the year. R. W. Richards, assisted by G. R. Mansfield and J. H. Bridges, made a detailed examination of about 500 square miles of the withdrawn lands in Idaho, lying between the towns of St. Charles and Soda Springs, in Bear Lake and Bannock counties. Sufficient information was acquired to enable the Survey to place a valuation on these lands based on their content of phosphate. This information is available at any time that Congress enacts the necessary legislation for disposing of the lands at their appraised value. The area examined is estimated to contain over a billion tons of high-grade phosphate rock. A report on these deposits has been completed and submitted for publication in Bulletin 470. T. W. Stanton, G. H. Girty, and J. P. Smith spent considerable time with this party studying the associated paleontologic and stratigraphic problems. In June the field work on these phosphate deposits was resumed by Mr. Richards, assisted by Mr. Mansfield and E. L. Troxell.

A brief report on sulphur deposits near Soda Springs, Idaho, was prepared by Messrs. Richards and Bridges, and a report on the lead and copper deposits in the Bear River Range, Utah and Idaho, was prepared by Mr. Richards, both for publication in Bulletin 470.

A reconnaissance of parts of northwestern Wyoming and eastern Idaho, between Lander and Afton, was made by Eliot Blackwelder, assisted during a part of the season by C. L. Breger. The purpose of this reconnaissance was to determine the extent and character of the phosphate deposits northeast of the well-known Bear Lake region of southeastern Idaho. A brief report on the results has been submitted for publication in Bulletin 470, and the lands have been classified provisionally, preliminary to more detailed surveys which are contemplated in the immediate future.

Deposits of commercial rock phosphate in Montana, similar to those in Idaho, Wyoming, and Utah, were discovered in the vicinity of Melrose, Mont., and an area covering the known extent of the deposit was withdrawn from entry pending further field examination. A short report on these deposits by H. S. Gale was published as an advance chapter (A) from Bulletin 470, and a revision of this report is included in another advance chapter (470–H) now in press.

The description of the general geology of the Philipsburg quadrangle (Mont.) was completed by F. C. Calkins for publication as a professional paper on the geology and ore deposits, and the folio on the quadrangle was prepared in collaboration with W. H. Emmons, who wrote the sections relating to ore deposits.

An item in the sundry civil act of June 25, 1910, being an amendment to the act of February 26, 1895 (Stat. L., vol. 28, p. 683), entitled "An act to provide for the examination and classification of certain mineral lands in the States of Montana and Idaho," made an appropriation to the General Land Office for the completion of the classification as mineral or nonmineral of certain specified lands within the grant of the Northern Pacific Railroad Co. in Montana and Idaho. Under the authority of the Secretary of the Interior the field examination and classification of these lands was assigned to the Geological Survey. This work was done under the supervision of Waldemar Lindgren and the field and office work were placed in charge of H. S. Gale. D. F. MacDonald, assisted by E. L. Jones, jr.; F. C. Calkins, assisted by G. F. Loughlin; R. W. Stone, assisted by W. R. Hill; J. T. Pardee; and E. E. Smith were engaged in this work. A total area of 288,465 acres in Montana and Idaho has been examined and classified, as shown in the reports of the land-classification board. (See p. 68.)

From observations made in connection with his classification work Mr. Stone prepared a paper on the geologic relations of the ore deposits in the Elkhorn Mountains, Mont., for publication in Bulletin 470. In May and June the classification of Northern Pacific lands was resumed by parties in charge of F. C. Calkins, J. T. Pardee, and R. W. Stone.

*Classification of public lands.*—The field examinations necessary for the classification and valuation of the coal and oil lands of the West were continued throughout the year. As in previous years, the field work was in charge of M. R. Campbell. The following is a brief statement of the work accomplished and in progress at the end of the fiscal year, with the names of the geologists who are directly responsible for its prosecution:

Fort Berthold Indian Reservation, N. Dak. Examination made by M. A. Pishel. Land classified and report submitted.

Williston lignite field, N. Dak. Examination in progress by F. A. Herald, under the supervision of E. G. Woodruff.

Marmarth coal field, N. Dak. Examination in progress by C. J. Hares, under the supervision of E. G. Woodruff.

Perkins County coal field, S. Dak. Examination in progress by D. E. Winchester, under the supervision of E. G. Woodruff.

Harding County coal field, S. Dak. Examination in progress by E. M. Parks, under the supervision of E. G. Woodruff.

Coal near the Black Hills, Wyo.-S. Dak. Report submitted for publication by R. W. Stone. (Bulletin 499.)

Southern part of the Sidney coal field, Mont. Detailed examination made by Eugene Stebinger, under the supervision of W. R. Calvert. Land classified and report in preparation.

Culbertson coal field, Mont. Examined by A. L. Beekly, under the supervision of W. R. Calvert. Land classified and report in hand.

Glendive lignite field, Mont. Mapped and studied by J. H. Hance, under the supervision of W. R. Calvert. Land classified and report prepared.

Baker lignite field, Mont. Mapped by M. A. Pishel (temporarily in charge) and C. F. Bowen, under the supervision of W. R. Calvert. Land classified and report prepared.

Terry lignite field, Mont. Examination made by F. A. Herald, under the supervision of W. R. Calvert. Land classified and report well advanced. Investigation being continued by E. T. Hancock (temporarily in charge) and G. S. Rogers, under the supervision of E. G. Woodruff.

Part of Milk River coal field, Mont. Report begun by L. J. Pepperberg in 1909, completed by G. B. Richardson.

Big Snowy Mountains coal field, Mont. Geologic study for the purpose of ascertaining the eastern extent of the Judith Basin coal region, in progress by W. R. Calvert.

Flathead Indian Reservation, Mont. Examination of town and villa sites, in progress by Eugene Stebinger.

Tertiary coal fields of western Montana. Examination in progress by J. T. Pardee.

Belle Fourche Valley lignite field, Wyo. Examination in progress by V. H. Barnett, under the supervision of E. G. Woodruff.

Little Powder River coal field, Wyo. Examination made of the eastern part of the Little Powder River coal field by J. A. Davis, under the supervision of A. R. Schultz. Land classified and preliminary report prepared.

Western County coal field, Wyo. Examined by V. H. Barnett, under the supervision of A. R. Schultz. About 700 square miles classified; about 600 square miles withheld pending examination of the area to the east.

Lost Springs coal field, Wyo. Examined by D. E. Winchester, under the supervision of A. R. Schultz. Land classified and report in hand.

Platte River coal field, Wyo. Examined by D. E. Winchester, under the supervision of A. R. Schultz. Land classified and report in preparation.

Buffalo-Sheridan coal field, Wyo. Examination of the formations outcropping along the eastern base of the Bighorn Mountains being continued by C. H. Wegemann.

Sussex coal field, Wyo. Examined by C. H. Wegemann, under the supervision of A. R. Schultz. Land classified and report well in hand.

Powder River oil field, Wyo. Examined by C. H. Wegemann. Land classified and report practically completed (to appear in Bulletin 471).

Wiley quadrangle, Wyo. Examination to determine primarily the possible accumulation of oil, in progress by D. F. Hewett, under the supervision of E. G. Woodruff.

Southern part of Denver Basin coal field, Colo. Examination made by G. B. Richardson. Land classified and report practically prepared.

North Park coal field, Colo. Examination in progress by A. L. Beekly.

De Beque oil field, Colo. Examined by E. G. Woodruff and report well advanced.

Grand Mesa and West Elk Mountain coal field, Colo. Report submitted for publication by Willis T. Lee.

Coal resources of Gunnison Valley, Colo. Studied by E. G. Woodruff in company with G. B. Richardson. Report in hand.

Mancos coal field, Colo. Reconnaissance examination in progress by M. A. Pishel.

Canon City and Raton Mesa coal fields, Colo. and N. Mex. Stratigraphic studies made along the eastern front of the Rocky Mountains from Denver southward, by W. T. Lee, to determine the extent and value of certain unconformities and also for the general purpose of determining the geologic age of the coal-bearing rocks. Report in preparation.

New Mexico coal fields. Examination in progress by W. T. Lee.

Dayton and Toyah oil fields, N. Mex. and Tex. Examination made by G. B. Richardson.

Tertiary "lake beds" of the Snake River valley, Idaho. Segregation of noncoal or nonmineral areas in progress by C. F. Bowen.

Uinta Basin, Utah. Examination made of the Cretaceous coal-bearing rocks along the south flank of the Uinta Mountains, from a point near the Colorado line westward to Currant Creek Valley, by C. T. Lupton. Investigation southward through Strawberry Valley in progress. The report is well in hand.

Sunnyside quadrangle, Utah. Examination in progress by F. R. Clark, under the supervision of C. T. Lupton.

San Juan oil field, Utah. Report completed and submitted by E. G. Woodruff (in Bulletin 471).

Part of Parowan Range, Utah. Rapid reconnaissance of coal geology made by M. W. Ball.

Washington. Report on "Coals of the State of Washington," by E. E. Smith, submitted for publication (Bulletin 474). Land classified by M. W. Ball.

Oil prospects of northwestern Oregon. Report in preparation by C. W. Washburne.

### WORK IN ROCKY MOUNTAIN MINING DISTRICTS.

The mining districts of the Dillon quadrangle (Mont.) were examined in July and August, 1910, by A. N. Winchell, who submitted for publication a preliminary report on these districts. Mr. Winchell also examined graphite deposits near Dillon and prepared a report for publication in Bulletin 470. A scientific discussion of the probable origin of graphite deposits in veins and pegmatites was published by Mr. Winchell in the journal Economic Geology.

The mineral resources of Lemhi County, Idaho, and the Bay Horse district, Custer County, Idaho, were examined by J. B. Umpleby, who has made progress in preparing a report embodying the results of his observations.

About four and a half months were spent in field work by E. S. Bastin, who was assisted by J. M. Hill, on the economic geology of the Central City quadrangle (Colo.). The areal mapping was completed, and the underground work was well advanced. In May Mr. Bastin resumed field work on this quadrangle.

At the request of the Department of Justice, J. M. Hill was detailed to make an examination of certain lands in the Olinghouse district, Washoe County, Nev. As a result of this work he prepared a paper on the Olinghouse and Ramsey mining districts, Nevada, for publication in Bulletin 470.

The report on the Breckenridge district, Colorado, was completed by F. L. Ransome during the summer of 1910 and is in press as Professional Paper 75.

During the winter Mr. Ransome, assisted by J. B. Umpleby, completed the mapping and study of the Ray quadrangle, Ariz. Mr.

Ransome spent a short time at Tombstone, Ariz., studying mine levels that there was reason to suppose would be submerged when pumping stopped. The mapping of the area covered by the Ray special map was completed, and work was begun on the area covered by the Miami special map, adjacent to the disseminated copper deposits. Progress has been made in the preparation of reports on the Ray and Miami areas, but additional study of the disseminated copper deposits is required before they can be completed.

At the request of the Post Office Department four groups of mining claims in the Cœur d'Alene district, Idaho, and two groups in western Montana were examined by F. C. Schrader, who subsequently submitted reports on them and gave testimony in the Federal district court at Spokane, Wash. Mr. Schrader's observations made during these examinations and earlier examinations for the Forest Service and Land Office in neighboring fields in 1908 enabled him to prepare a paper on gold-bearing ground moraine in northwestern Montana, with generalizations on similar occurrences of placer gold elsewhere in the Northwest. The report is now in press as a paper in Bulletin 470.

A geologic reconnaissance of the Jarbidge, Contact, and Elk Mountain mining districts in Elko County, Nev., was made by Mr. Schrader, assisted at Jarbidge by R. D. Pickett and at Contact by N. W. Sweetser. A report with maps and illustrations (Bulletin 497) was subsequently submitted on these districts.

The geologic map and the study of the ore deposits of the Ely special area, Nevada, were completed by A. C. Spencer, who also studied in detail the relations of the important deposits of disseminated copper ore of the district. The report on this district is well advanced and will soon be submitted for publication.

Field work was completed on the Frisco district, Utah, by B. S. Butler, who also made a reconnaissance of the Lincoln, Granite, Pine Grove, Gold Springs, and State Line districts, Utah, and of the Fay district, Nevada. Reports on these districts are in preparation.

The final report on the Park City district, Utah, the preparation of which has been delayed by the resignation of J. M. Boutwell from the survey, was completed by him and submitted for publication in May, 1911.

Progress was made on the revision of the Leadville monograph until its interruption by the death of S. F. Emmons on March 28, 1911. Mr. Emmons was assisted in this work by J. D. Irving, of Yale University, with whom arrangements have been made for its completion.

A report on the ore deposits of Lake City, Colo., has been completed during the year by J. D. Irving and Howland Bancroft, and is in press as Bulletin 478.

### WORK ON THE PACIFIC COAST.

An additional investigation of the ore deposits of northeastern Washington was made by Howland Bancroft, and a report covering his work has been completed. He also wrote a report on the lead and zinc deposits of the Metaline mining district, Washington, which forms a part of Bulletin 470.

The survey of the Klamath Mountains of northern California and Oregon has been continued by J. S. Diller, who, during the year, has mapped in detail one-third of the Big Bar quadrangle and prepared a paper on the auriferous gravels of the Trinity River basin, to be published in Bulletin 470.

Additional field work in the copper-mining districts of Shasta County, Cal., was done by L. C. Graton, who made considerable progress toward completing the final report being prepared by him and B. S. Butler, which will be published as a professional paper of the Survey.

The field work on the Randsburg quadrangle (Cal.) was completed by F. L. Hess, and the report is in progress.

The manuscript for the San Francisco (Cal.) folio has been submitted for publication by A. C. Lawson. In this work Prof. Lawson was assisted by several instructors and graduate students in the University of California.

The manuscript for the Ventura (Cal.) folio has been nearly completed for publication by Ralph Arnold and J. R. Pemberton.

Additional work was done in the Corona quadrangle (Cal.) by E. S. Larsen, jr., and progress is being made on the folio.

The investigations of the California oil fields were continued by Robert Anderson, assisted by R. W. Pack. Special attention was given to regions having prospective value for oil, with the aim of carrying the geologic work ahead of development and outlining the areas in which oil is likely to occur. During the summer and fall of 1910 the east flank of the Diablo Range between Panoche and Livermore valleys was examined in detail, thus completing a study of the whole west side of the San Joaquin Valley. In addition, a reconnaissance examination was made around the south end of the San Joaquin Valley. This work resulted in the classification of several areas as possible oil land and the restoration to entry of other areas which had been temporarily withdrawn pending examination but which proved to afford no promise of oil. A preliminary report on the Cantua-Panoche region by Robert Anderson (in Bulletin 431) was published in the fall of 1910. In the spring of 1911 a full report on the entire east flank of the Diablo Range north of Coalinga was brought well toward completion, and a preliminary report on the south end of the San Joaquin Valley was prepared for publication in Bulletin 471.

### GENERAL GEOLOGIC AND PALEONTOLOGIC WORK.

During the year W. H. Dall continued his studies on the Tertiary faunas of North America. He spent some time in visiting a large number of private and public collections of Tertiary and later fossils on the Pacific coast, thus accumulating a large amount of interesting material and information concerning the Pacific coast Tertiary deposits, in the study of which he is engaged. Good progress has been made in the preparation of a card catalogue of the Tertiary fossils of the Pacific coast, supplementary to that already in use for the eastern Tertiary fossils. Large collections of Tertiary fossils have been received from geologists working on the Atlantic and Gulf coastal plains and have been arranged and identified.

In addition to supervising paleontologic work, T. W. Stanton has continued his studies of the Mesozoic fossils, giving special attention to the correlation of the coal-bearing formations of the Rocky Mountain region. He has also rendered material assistance in determining Cretaceous fossils from the Atlantic and Gulf coastal plains.

In connection with his stratigraphic work T. W. Vaughan continued his studies of the Florida keys, reefs, and marine bottom deposits, under the auspices of the Carnegie Institution of Washington, in cooperation with the Geological Survey, having been engaged in these investigations from May 31 to June 30, inclusive. Besides preparing a summary report of his investigation of the physical conditions under which reef corals live and their rate of growth, for the Carnegie Institution Yearbook No. 9, 1910, he wrote an article entitled "The physical conditions under which Paleozoic coral reefs are formed," which has been published in the bulletin of the Geological Society of America. Mr. Vaughan has succeeded in rearing coral colonies from larvæ at the Tortugas laboratory of the Carnegie Institution. In estimating the rate of growth of coral reefs it is essential to know the rate of growth of the various kinds of coral composing the reefs, and the results obtained by Mr. Vaughan constitute the first trustworthy data that have been obtained for a solution of this problem. Mr. Vaughan also obtained additional information on the calcareous bottom deposits now forming in shallow water along the Florida coast.

The investigation of Triassic paleontology and stratigraphy in Utah and Idaho has been continued by J. P. Smith, of Leland Stanford Junior University. Mr. Smith visited the parties engaged in the study of the phosphate deposits in Idaho and rendered material assistance in their work. The monograph on the marine Middle Triassic fossils of America has been completed by Mr. Smith and transmitted for publication. His report on the Lower Triassic faunas is well advanced, although descriptions of the species are still in preliminary form and will require much revision.

Investigation of Carboniferous invertebrate paleontology was continued by G. H. Girty, who spent four months in field work, chiefly in Idaho, New Mexico, Texas, and Tennessee, with less time in Ohio, Utah, and West Virginia. He made extensive collections of fossils and exact stratigraphic observations relating to them, and determined the geologic age and correlation of horizons for the parties with which he was associated. He completed a report describing the fauna of the Wewoka formation of Oklahoma and spent much time in arranging collections and preparing reports on fossils referred to him from different field parties in connection with their work.

In addition to his work on the Niagara quadrangle, mentioned elsewhere, E. M. Kindle continued investigations, begun the preceding season, of problems of stratigraphy and correlation relating to the Devonian formations of Pennsylvania and the southern Appalachian region. He also spent much time in preparing and studying Devonian fossils collected by geologists and submitted to him for determination.

Studies of the Cambrian, Ordovician, and Silurian rocks in the Appalachian and Mississippi valleys were continued by E. O. Ulrich, with the assistance of Edwin Kirk. The general results of Mr. Ulrich's stratigraphic studies of American Paleozoic deposits during the past 20 years are presented in a work entitled "Revision of Paleozoic systems," published by the Geological Society of America.

In connection with the classification of coal land F. H. Knowlton, assisted by A. C. Peale, spent the field season in studying paleontologic and geologic problems in the Rocky Mountain region. He procured a large amount of paleobotanic and other material for use in correlating several upper Cretaceous and Tertiary formations. During the office season Mr. Knowlton studied and reported on more than 400 collections of fossil plants for the use of geologists in locating and correlating Mesozoic and Cenozoic horizons, mainly in the Rocky Mountain region. One of these collections, that from the Trinidad-Raton coal field, comprised nearly 3 tons of material. A number of scientific papers were prepared for outside publication.

Under the joint supervision of Messrs. Knowlton and White the work on the bibliography and compendium of paleobotany has been continued by Miss C. H. Schmidt. The estimate made in January, 1910, that this work would be completed by the end of the fiscal year 1912 seems likely to be fully justified, as satisfactory progress has been made during the year.

The geologic map of North America, which has been compiled under the general supervision of Bailey Willis, is now in press.

During the last year, owing to the absence of Mr. Willis from this country, the work on this map has been in charge of G. W. Stose, who has given to the work a large amount of attention. Credit is also due in this connection to the geologists of the Survey generally, who have contributed largely to the completeness of the work. Mr. Stose has continued in charge of the editing of the maps of geologic folios, his detailed report as editor of geologic maps appearing on pages 134–135.

During June, 1911, A. C. Spencer devoted his attention to the study of certain tracts of land on the headwaters of Tennessee River in Fannin County, Ga., and Blount County, Tenn., which had been offered to the Secretary of Agriculture under the Weeks Act, providing for the acquisition of lands for the purpose of conserving the navigable rivers. Careful examination of these tracts resulted in reports affirming that forest control would tend to ameliorate existing conditions, which were found to be favorable to rapid erosion and soil waste in the forested areas. The greatest factor in excessive erosion has been the frequent burning over of forest lands, which destroys the leaf mat and underbrush that naturally prevents the soil from washing. If fires can be kept out permanently a very material decrease is to be expected in the amount of sediment delivered to the local creeks, and the sediment eventually delivered to Tennessee River would be lessened in proportion.

### WORK OF COMMITTEE ON GEOLOGIC NAMES.

The committee on geologic names is composed of Arthur Keith (chairman), M. R. Campbell (vice chairman), W. C. Alden, W. C. Mendenhall, F. L. Ransome, T. W. Stanton, G. W. Stose, and David White. The clerical work of the committee is performed by one clerk, Miss M. G. Wilmarth, who is designated as the secretary.

According to the Director's instructions of January 30, 1909, "It is the duty of the committee on geologic names to consider all geologic names used by members of the Geological Survey in both official and unofficial publications. When manuscripts are received by the committee they shall be examined as soon as practicable and the committee shall decide whether the names employed are permissible or not."

The chief objects of the committee are to insure uniformity in geologic classification and nomenclature in Survey publications, to prevent unnecessary duplication of geologic names, and to reduce the number of names employed, through correlation of the formations from one area to another. The main criteria on which the decisions of the committee are based are priority of publication, significance acquired by usage, and adequacy of definition and type locality. No one of these criteria is relied on to the exclusion of the others.

The records of the committee comprise (1) a catalogue of geologic names considered by the committee, arranged alphabetically, the action taken for each manuscript being recorded; (2) a catalogue of American geologic names in the literature, also arranged alphabetically, each published description of a formation being recorded (this catalogue is the work of J. M. Nickles, of the library staff); (3) a catalogue of the geologic names in the literature, arranged by States; (4) a catalogue of geologic columnar sections approved by the committee, arranged by States, the area to which each columnar section applies being located on the appropriate State map; and (5) a catalogue of geologic columnar sections in the United States, classified by States, compiled from existing literature, the areas being located on a set of State maps. The last catalogue is not complete but is being brought up to date as rapidly as possible. It is designed to prevent unnecessary duplication of geologic names. All these records, except as noted above, have been prepared and are kept up to date by the secretary of the committee.

The amount of labor and research which devolves upon the committee can be understood from the statement that during the last fiscal year it considered 125 manuscripts, comprising a total of about 17,000 pages and more than 2,500 geologic names. These manuscripts discussed the geology of all parts of the United States.

## LAND-CLASSIFICATION BOARD.

### ORGANIZATION.

The organization of the land-classification board during the fiscal year 1910–11 has continued along the general lines indicated in previous annual reports. The board is a section of the geologic branch administered by a chairman and a general advisory committee, the latter made up of the chiefs of branches, divisions, and sections, whose field work supplies the greater part of the fundamental data that form the basis of the board's action. Within the land-classification board are subordinate boards, each of which deals directly with one of the natural resources and certain public-land problems related thereto. The number of these subordinate boards may be increased or diminished from time to time as the exigencies of the work require. At present there are subboards that deal with the classification of coal, oil and gas, phosphate, and metalliferous deposits and with irrigation and power matters. On December 1, 1910, A. C. Veatch, until that date in charge of the board, applied for and was granted leave of absence. This, together with other changes in the personnel, necessitated certain measures of reorganization, which were effected on January 1, 1911. By virtue of these changes and others made later in the fiscal year, the organization of the board on June 30, 1911, is as follows:

W. C. Mendenhall, in charge of the board, chairman of the advisory committee, and ex officio chairman of each of the classification boards.

N. C. Grover, chief engineer of the board and ex officio member of irrigation and power boards.

W. R. Calvert, chairman of the coal board.

M. W. Ball, chairman of the oil, phosphate, and metalliferous deposits boards.

W. B. Heroy, chairman of the irrigation and power boards.

The additional members of the advisory committee and subboards are as follows:

Advisory committee: C. W. Hayes, M. O. Leighton, Waldemar Lindgren, M. R. Campbell, A. H. Brooks.

Coal-classification board: M. W. Ball, A. L. Beckly, C. T. Lupton.

Oil-classification board: Robert Anderson, C. H. Wegemann.

Phosphate-classification board: H. S. Gale, R. W. Richards.

Metalliferous deposits classification board: H. D. McCaskey, E. S. Bastin.

Irrigation board: J. C. Hoyt, O. E. Meinzer.

Power board: M. O. Leighton, Herman Stabler.

The fundamental purpose for which the board and subboards were created is to carry out the mandate of the organic act of the Geological Survey, in which it is charged primarily with the classification of the public lands. This work of classification involves many questions as to procedure in public-land matters, partly incidental to the classifications and partly the result of statutes recently enacted, in the administration of which certain responsibilities devolve upon the Survey, either directly or in cooperation with other bureaus in the Interior Department.

The board's operations during the year 1910–11 differed from those of previous years rather in the volume of the work done than in the nature of the work. The amount has been increased, for example, by certain cooperative agreements with the General Land Office, by virtue of which the commissioner requests information on the mineral or power value of lands for which patent is asked, either before or after examination by special agents. The Indian Office, under the Secretary's orders, likewise refers to the Geological Survey lands listed for patent and lands which it is proposed to eliminate from the reservations and throw open for settlement, in order that the mineral or nonmineral character or the power value of the lands affected may be determined. Proposed eliminations from national forests are likewise referred for report as to mineral character and power value, and all Carey Act lists are submitted to the Survey for a statement as to the sufficiency of the water supply and the adequacy of the proposed plan of irrigation before the lists are approved for segregation.

These various types of work are more fully discussed under appropriate headings in the statements which follow.

## COAL.

*Classifications.*—Coal lands have been classified during the year at an increased rate. The area appraised as coal land during the fiscal year 1909–10 was 4,876,196 acres; during 1910–11 the area so appraised was 7,821,508 acres. The area classified as noncoal land during 1910–11 is 2,386,444 acres greater than that so classified in 1909–10. On the other hand, the average price fixed per acre and the total appraised value are notably less for the last year than for the preceding year. The difference is due to a concentration of work in the lignite and low-grade subbituminous fields of eastern Montana and Wyoming, where the appraised values under the regulations are the minimum fixed by law. The following table shows the progress of coal-land classification, by States, during the year:

*Progress of classification of coal land during the year ending June 30, 1911.*

[Areas in acres.]

| State. | Date, June 30— | Areas classified as coal land and appraised. |  | Areas classified as noncoal land. |  | Valuation fixed. |  | Total minimum valuation. |  | Average price per acre. |  |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  | Under old regulations. | Under new regulations. | Under old regulations. | Under new regulations. | Under old regulations. | Under new regulations. | Under old regulations. | Under new regulations. | Old regulations. | New regulations. |
| Arizona | 1910 |  |  |  |  |  |  |  |  |  |  |
|  | 1911 |  |  |  | 42,492 |  |  |  |  |  |  |
| Arkansas | 1910 | 60,715 |  | 70,038 |  | $1,473,762 |  | $1,214,280 |  | $24.3 |  |
|  | 1911 | 60,715 |  | 70,038 |  | 1,473,762 |  | 1,214,280 |  | 24.3 |  |
| California | 1910 |  | 7,720 |  | 6,242 |  | $585,086 |  | $154,404 |  | $75.8 |
|  | 1911 |  | 7,720 |  | 6,242 |  | 585,086 |  | 154,404 |  | 75.8 |
| Colorado | 1910 | 354,478 | 1,703,616 | 1,867,474 | 2,992,896 | 10,185,620 | 108,633,375 | 4,531,619 | 33,380,110 | 28.7 | 63.1 |
|  | 1911 |  | 2,873,929 | 882,897 | 4,542,167 |  | 167,775,104 |  | 50,309,589 |  | 58.4 |
| Idaho | 1910 |  |  |  |  |  |  |  |  |  |  |
|  | 1911 |  |  |  | 1,280,553 |  |  |  |  |  |  |
| Montana | 1910 | 486,140 | 791,351 | 3,824,383 | 3,651,139 | 8,618,264 | 22,038,767 | 8,364,798 | 15,032,754 | 17.7 | 27.8 |
|  | 1911 | 201,743 | 3,310,605 | 3,489,322 | 6,845,842 | 3,075,233 | 91,388,414 | 3,000,433 | 73,397,947 | 15.2 | 27.6 |
| New Mexico | 1910 | 1,808,738 | 7,406 | 2,414,270 | 249,748 | 21,997,786 | 274,486 | 21,970,526 | 148,128 | 12.2 | 37.1 |
|  | 1911 | 363,767 | 590,447 | 2,065,217 | 739,739 | 6,714,123 | 14,547,541 | 6,702,063 | 6,821,729 | 18.5 | 24.6 |
| North Dakota | 1910 | 530,491 |  |  | 686,468 | 7,579,630 |  | 7,579,630 |  | 14.3 |  |
|  | 1911 | 230,814 |  |  | 1,020,999 | 4,582,860 |  | 4,582,860 |  | 19.9 |  |
| Oregon | 1910 |  | 80 | 893,318 |  |  | 1,600 |  | 1,600 |  | 20.0 |
|  | 1911 |  | 1,897 | 893,318 | 176,785 |  | 49,909 |  | 37,919 |  | 26.3 |
| South Dakota | 1910 |  |  |  | 4,340,366 |  |  |  |  |  |  |
|  | 1911 |  |  |  | 4,835,334 |  |  |  |  |  |  |
| Utah | 1910 | 400,948 | 67,092 | 1,098,036 | 286,942 | 11,459,844 | 3,521,591 | 5,755,586 | 1,201,591 | 28.6 | 52.5 |
|  | 1911 |  | 636,479 | 712.675 | 1,212,838 |  | 36,576,849 |  | 8,287,783 |  | 57.5 |
| Washington | 1910 |  |  | 627,198 | 6,240 |  |  |  |  |  |  |
|  | 1911 |  | 40 | 627,198 | 6,240 |  | 2,000 |  | 800 |  | 50.0 |
| Wyoming | 1910 | 1.561,886 | 2,896,265 | 577,988 | 5,693,302 | 30,417,405 | 220,601,996 | 26,871,977 | 49,532,042 | 19.5 | 76.2 |
|  | 1911 | 1,273,798 | 5,873,921 | 1,760,217 | 8,073,626 | 21,899,566 | 359,905,292 | 20,080,162 | 89,853,555 | 17.2 | 61.3 |
| Total areas recorded as classified | 1910 | 5.203,396 | 5,473,530 | 13,372,705 | 17,913.343 | 91,732,311 | 355,656,901 | 76,288,416 | 99,450,629 | 17.6 | 65.0 |
|  | 1911 | 2,130,837 | 13,295,038 | 10,500,882 | 28,782,857 | 37,745,544 | 670,830,195 | 35,579,798 | 228,863,726 | 17.7 | 50.5 |
| Total areas covered during fiscal year. |  | [a] 3,072,559 | 7,821,508 | [a] 2,871,823 | 10,869,514 | [a] 53,986,767 | 315,173,294 | [a] 40,708,618 | 129,413,097 | 17.6 | 40.3 |

[a] Total reduction in area classified under old regulations, comprising lands either rewithdrawn or reclassified under new regulations.

The charge has been made that the classification policy has been harmful to the coal industry of the West by placing prohibitive prices on the public coal lands. The fact that the coal production of the Rocky Mountain States in 1910 showed an increase of 14.7 per cent over the production of 1909 indicates that the coal industry has not been seriously injured. The following table refutes any statement that the prices fixed are prohibitive, by showing that the sale of coal lands during the four fiscal years since the adoption of the classification policy has been 12½ per cent greater than during the four preceding years, while the increase in receipts from the sales has been 36 per cent.

*Sales of coal lands at all prices, in the United States, exclusive of Alaska, from 1903 to 1911.*

| Fiscal year. | Entries. | Acres. | Receipts. | Average price per acre. |
|---|---|---|---|---|
| 1903–4 | 190 | 28,827.42 | $395,209.90 | $13.74 |
| 1904–5 | 158 | 20,456.35 | 277,402.40 | 13.56 |
| 1905–6 | 244 | 42,143.39 | 538,683.70 | 12.54 |
| 1906–7 | 157 | 20,387.02 | 303,255.60 | 14.80 |
| Four years prior to July 1, 1907 | 749 | 111,814.18 | 1,514,551.60 | 13.54 |
| 1907–8 | 299 | 58,047.10 | 647,584.55 | 11.15 |
| 1908–9 | 182 | 26,590.68 | 502,743.65 | 18.90 |
| 1909–10 | 189 | 26,074,16 | 657,175.80 | 25.20 |
| 1910–11 | 83 | 15,284.89 | 251,323.03 | 16.44 |
| Four years since July 1, 1907 | 753 | 125,996.83 | 2,058,827.03 | 16.34 |

Many of the lands sold since July 1, 1907, have doubtless been unclassified lands sold at the minimum price, but the following table shows that by no means all the sales have been at minimum, and that the increase in sales since July 1, 1907, is much more than equaled by the sales at classified prices greater than the minimum. In other words, the acreage sold at the minimum has been less since classification begun than in the same period preceding, although the total acreage sold has increased, indicating, certainly, that the classifications have not prohibited the purchase of coal lands.

*Sales of coal lands at various rates since July 1, 1907.*

| Price per acre. | Entries. | Acres. | Receipts. | Price per acre. | Entries. | Acres. | Receipts. |
|---|---|---|---|---|---|---|---|
| $10.00 | 328 | 46,022.21 | $461,099.33 | $75.00 | 2 | 161.23 | $12,092.25 |
| 15.00 | 15 | 2,310.55 | 34,658.25 | 90.00 | 1 | 121.69 | 10,952.10 |
| 17.50 | 1 | 40.00 | 700.00 | 92.00 | 1 | 40.00 | 3,680.00 |
| 20.00 | 258 | 52,833.03 | 773,028.80 | 100.00 | 1 | 38.48 | 3,848.00 |
| 25.00 | 37 | 11,171.68 | 131,671.70 | 120.00 | 1 | 40.00 | 4,800.00 |
| 30.00 | 23 | 3,159.81 | 94,794.30 | 135.00 | 1 | 80.00 | 10,800.00 |
| 35.00 | 2 | 239.78 | 8,392.30 | 140.00 | 1 | 120.00 | 16,800.00 |
| 40.00 | 8 | 800.06 | 32,002.40 | 170.00 | 1 | 39.89 | 6.781.30 |
| 45.00 |  | 240.00 | 10,800.00 | 180.00 | 1 | 40.00 | 7,200.00 |
| 49.00 | 1 | 40.00 | 1,960.00 | 270.00 | 1 | 39.79 | 10.743.30 |
| 50.00 | 69 | 8,218.63 | 409,023.00 |  |  |  |  |
| 65.00 |  | 200.00 | 13,000.00 |  | 753 | 125,996.83 | 2,058,827.03 |

*Withdrawals.*—Two great withdrawals of land for determination of its content of coal were made during the year, one in the Dakotas and one in Idaho. The areas withdrawn in the Dakotas, judged from the facts gathered in field examinations made up to date, promise to be very largely coal land. The area withdrawn in Idaho, on the other hand, is being shown by field survey to be mainly noncoal land, and more than a million acres have already been classified as noncoal land. It is significant that the area withdrawn for examination for coal has been increasing year by year, rather than decreasing constantly by restorations made as a result of classification, as might be expected. Although the field examinations have each year increased the area classified, and therefore subtracted from the areas withdrawn, the restorations have been more than offset by the withdrawal of areas indicated as coal bearing by new information or by a study of data already at hand. However, in Colorado, Montana, and Wyoming, where the field work was concentrated during the season of 1910, the restorations far outbalance the withdrawals. It is probable that the maximum withdrawn area has been reached this year and that the withdrawals will steadily decrease hereafter.

*Withdrawals of coal lands, fiscal year 1910–11, in acres.*

| States. | Withdrawals outstanding July 1, 1910. | New withdrawals. | Restorations. | Withdrawals outstanding June 30, 1911. |
|---|---|---|---|---|
| Alaska | (a) | | | (a) |
| Arizona | 161,210 | | 42,492 | 118,718 |
| California | | 239.903 | | 239,903 |
| Colorado | 6,656,518 | 977,944 | 2,117,124 | 5,517,338 |
| Idaho | | 8,265,970 | 1,280,553 | 6,985.417 |
| Montana | 23,920,978 | 740,849 | 4,771,356 | 19,890.471 |
| Nevada | | 92,141 | | 92,141 |
| New Mexico | 3,155,295 | 3,120,530 | 466,335 | 5,809.490 |
| North Dakota | | 18,454,490 | | 18,454,490 |
| Oregon | 379,452 | | 375,931 | 3,521 |
| South Dakota | | 2,869,377 | 494,114 | 2,375,263 |
| Utah | 5,897,958 | 1,054,154 | 730,798 | 6,221,314 |
| Washington | 2,210.847 | | 40 | 2,210,807 |
| Wyoming | 10,854,704 | 780,731 | 4,621,892 | 7,013,543 |
| | 53,236,962 | 36,596,089 | 14,900,635 | 74,932,416 |

a Area unknown.

*Applications for reclassification.*—The beneficial effects of the act of June 22, 1910 (Stat. L., vol. 36, p. 583), providing for agricultural entries for surface rights only on lands classified as coal lands, are shown by the decreased number of applications for the reclassification of areas so classified. Whereas 127 applications were received during the fiscal year 1909–10, but 48—only a little over one-third that number—were received during the year 1910–11. Before the passage of this act lands classified as coal bearing could not be disposed of except as coal land at the appraised price. As a result agricultural development of these areas was impossible, and many applications were received alleging the classification to be erroneous and praying for its reversal in order that agricultural entries might be made. Now agricultural entries may be made upon coal lands, the entryman receiving title to the surface only and the United States reserving title to all underlying deposits of coal. A summary of the applications acted upon during the year follows:

*Applications for reclassification of coal land, fiscal year 1910–11.*

| State. | Number received. | Denied. | Pending. |
|---|---|---|---|
| Colorado | 2 | 4 | 0 |
| Montana | 18 | 18 | 1 |
| North Dakota | 1 |  | 1 |
| Utah | 7 |  | 7 |
| Wyoming | 20 | 1 | 19 |
|  | 48 | 23 | [a] 28 |

[a] One application from Montana and two from Colorado received before June 30, 1910.

*Applications for classification.*—Agricultural entries for surface rights only may not be commuted, a certain proportion of the entry must be cultivated each year, and the total area which may be included in a desert-land entry for surface rights is restricted to 160 acres. These conditions lead to the submission of applications for the classification as noncoal land of areas withdrawn pending their classification as to coal. As these withdrawals are usually made in order to retain the title to the coal deposits in the Government until field examination can be made on which to base a classification, most of such applications can not be granted. It has, however, been possible, from information at hand, to grant 4 of the 46 such applications received during the year.

The following table shows the distribution of the applications:

*Applications for classification of coal land, fiscal year 1910–11.*

| State. | Number received. | Approved. | Denied. | Pending. |
|---|---|---|---|---|
| Colorado | 2 | 1 | 1 |  |
| Idaho | 26 |  | 26 |  |
| Montana | 11 | 2 | 5 | 4 |
| New Mexico | 4 |  | 3 | 1 |
| South Dakota | 1 | 1 |  |  |
| Washington | 1 |  | 1 |  |
| Wyoming | 1 |  |  | 1 |
|  | 46 | 4 | 36 | 6 |

### OIL.

Pending the enactment of legislation for disposing of oil and gas deposits on the public domain, and because it seems desirable to retain certain of these deposits for use as fuel by the American Navy, all public lands known or thought to contain valuable deposits of oil or gas are withdrawn from all forms of disposal. During the year 640,604 acres of possible oil land in California and Wyoming were withdrawn from entry, and 1,232,719 acres in the same States, shown by field examination to be nonoil lands, were restored. In addition, all oil lands in Alaska, comprising an unknown area, were withdrawn during the year. In the early part of the year the outstanding withdrawals made by the Secretary of the Interior were ratified, confirmed, and continued in full force and effect by the President under the act of June 25, 1910. The following table contains a summary of all action affecting the status of oil lands prior to June 30, 1911:

*Withdrawals of oil lands, fiscal year 1910–11, in acres.*

| State. | Outstanding July 1, 1910. | New withdrawals.[a] | Restorations. | Outstanding June 30, 1911. |
|---|---|---|---|---|
| Alaska |  | Unsurveyed. |  | Unsurveyed. |
| Arizona | 230,400 |  |  | 230,400 |
| California | 2,498,173 | 305,802 | 1,211,271 | 1,592,704 |
| Colorado | 87,474 |  |  | 87,474 |
| Louisiana | 414,720 |  |  | 414,720 |
| New Mexico | 419,901 |  |  | 419,901 |
| Oregon | 74,849 |  |  | 74,849 |
| Utah | 581,566 |  |  | 581,566 |
| Wyoming | 255,461 | 334,802 | 21,448 | 568,815 |
|  | 4,562,544 | 640,604 | 1,232,719 | 3,970,429 |

[a] Excluding changes in forms of withdrawals.

### PHOSPHATE.

During the year a deposit of phosphate rock in southwestern Montana, similar in character to the deposits of Utah, Idaho, and Wyoming and at the same geologic horizon, was discovered by H. S. Gale, of the Survey. This discovery is important not only because of the quantity of phosphate found, but because it indicates the possibility that the deposits of phosphate rock are distributed over a much wider territory than had formerly been supposed.

In the early part of the year the outstanding withdrawals of phosphate land made by the Secretary of the Interior were ratified and continued in full force and effect by the President under the act of June 25, 1910 (Stat. L., vol. 36, p. 847). The area withdrawn as a result of the discovery in Montana comprises 33,950 acres, which, with withdrawals in Florida and Utah, makes a total of 65,589 acres withdrawn during the year. Field examinations in Idaho resulted in the restoration of 149,929 acres, leaving in phosphate withdrawals June 30, 1911, a total of 2,399,416 acres. A summary of the outstanding withdrawals follows:

*Withdrawals of phosphate lands, fiscal year 1910–11, in acres.*

| State. | Outstanding July 1, 1910. | New withdrawals.[a] | Restorations. | Outstanding June 30, 1911. |
|---|---|---|---|---|
| Florida | 2,400 | 35,439 | | 37,839 |
| Idaho | 1,102,317 | | 149,929 | 952,388 |
| Montana | | 33,950 | | 33,950 |
| Utah | 107,545 | 200 | | 107,745 |
| Wyoming | 1,267,494 | | | 1,267,494 |
| | 2,479,756 | 69,589 | 149,929 | 2,399,416 |

[a] Excluding changes in form of withdrawals and rewithdrawals.

### METALLIFEROUS DEPOSITS.

Under the act of February 26, 1895 (Stat. L., vol. 28, p. 683), provision was made for classifying with regard to their mineral or nonmineral character the lands within the Northern Pacific Railroad grant in Montana and Idaho. The classification made proved unsatisfactory for many areas and a reclassification was provided for in the sundry civil act of June 25, 1910 (Stat. L., vol. 36, p. 703). At the request of the General Land Office the reclassification was made by the Survey. The results of the work of the year are shown in the following table:

*Lands in Northern Pacific Railroad grant in Montana and Idaho classified during fiscal year 1910–11, in acres.*

| State. | Mineral. | Nonmineral. | Total. |
|---|---|---|---|
| Montana | 130,386 | 21,722 | 152,108 |
| Idaho | 45,645 | 90,712 | 136,357 |
| | 176,031 | 112,434 | 288,465 |

### WATER POWER.

*Withdrawals and restorations.*—During the year the work of classifying the public lands with relation to their value for water-power development has followed the general plan pursued in previous years. On July 2, 1910, the earlier withdrawals, amounting to 1,454,499 acres, were ratified and continued by the President under the authority conferred by the act of June 25, 1910 (Stat. L., vol. 36, p. 847). As a result of field investigations, 143,555 acres included in withdrawals were determined to be without value for power purposes and were restored to the public domain and 204,460 acres were included in new withdrawals, the total area withdrawn at the close of the fiscal year amounting to 1,515,423 acres.

The status of power-site withdrawals by States is shown in the following table:

*Water-power site withdrawals, fiscal year 1910–11, in acres.*

| State. | Outstanding July 1, 1910. | New withdrawals during fiscal year. | Restorations during fiscal year. | Outstanding June 30, 1911. |
|---|---|---|---|---|
| Alaska | .......... | .......... | .......... | .......... |
| Arizona | 107,550 | 106,000 | 160 | 213,390 |
| California | 47,819 | 5,870 | 0 | 53,689 |
| Colorado | 201,549 | 10,131 | 2,506 | 209,174 |
| Idaho | 230,971 | 16,458 | 17,756 | 229,692 |
| Minnesota | .......... | 8,388 | .......... | 8,388 |
| Montana | 122,515 | 16,803 | 11,631 | 127,687 |
| Nevada | 14,091 | 1,284 | .......... | 15,375 |
| New Mexico | 14,536 | .......... | 4,830 | 9,706 |
| North Dakota | .......... | .......... | .......... | .......... |
| Oregon | 176,721 | 7,948 | 22,874 | 161,795 |
| South Dakota | .......... | .......... | .......... | .......... |
| Utah | 379,912 | 1,080 | 33,740 | 347,252 |
| Washington | 55,439 | 26,404 | 1,457 | 80,386 |
| Wyoming | 103,396 | 4,094 | 48,601 | 58,889 |
|  | 1,454,499 | 204,460 | 143,555 | 1,515,423 |

*Applications for reclassification.*—Twenty-one applications for reclassification of lands withdrawn because of their value for power purposes have been received during the fiscal year. Action has been taken on nine of them.

*Right-of-way applications.*—The examination of applications for right of way across the public lands for railroads, canals, ditches, and reservoirs for irrigation, mining, and municipal supply and structures for power development has been continued by the Survey. At first the inquiry was made primarily for the purpose of determining the effect which the approval of the application and the construction of the proposed works would have on future power development, but its scope has been broadened to include the investigation of the water supply and the general engineering feasibility of power and irrigation projects. If it appears that the approval of a right of way would tie up large bodies of public land without reasonable probability of future utilization for the purpose contemplated, the facts determined are reported to the department with a recommendation that the right of way be not granted. If a proposed railroad is to approach a stream which may be utilized for power development an examination is made to determine whether the grade proposed will interfere with the future development of power. Where the railroad location is found to conflict with reservoir or dam sites, a careful study of all the conditions is made to determine whether or not the conflict may be minimized or avoided by relocating the railroad grade and thus preserving the possibility of power development and at the same time permitting the development of transportation facilities.

It frequently appears that the value of lands for power sites is contingent upon future irrigation development, irrigation being recognized as the higher use. Applications for rights of way for irrigation across lands withdrawn for power are therefore carefully considered, and if the projects of which they are a part appear meritorious, a modification of the order of withdrawal to permit the granting of the application is recommended. Pending the construction of the project and the use of the water for irrigation the lands affected are retained in withdrawal, so that if the grantee shall default in construction the power value of the lands may still be considered and controlled. The character of the applications received and the action taken thereon is shown by the accompanying table:

*Applications for rights of way.*[a]

| | Railroad. | Irrigation. | Water power. | Miscellaneous. | Total. |
|---|---|---|---|---|---|
| Pending July 1, 1910 | 1 | 44 | 10 | 3 | 58 |
| Received July 1, 1910, to June 30, 1911 | 386 | 655 | 31 | 47 | 1,119 |
| Acted on July 1, 1910, to June 30, 1911 | 277 | 516 | 19 | 39 | 851 |
| Pending June 30, 1911 | 110 | 183 | 22 | 11 | 326 |

[a] First application received from Secretary's office Oct. 11, 1909; first application received from General Land Office Nov. 11, 1909; first application received from Indian Office Dec. 23, 1909.

### IRRIGATION.

*Carey Act segregations.*—Thirty-one segregation lists prepared under the Carey Act have been referred during the year to the board for report on the water supply available and the general feasibility of the projects contemplated. Five of these lists were recommended for approval unconditionally, and three others, covering projects that involved pumping, were determined to have sufficient water supply for reclaiming the lands considered. Examination of 18 applications showed that under the plan of irrigation proposed by the State the projects contemplated would have an insufficient water supply, and reports were made accordingly. At the close of the year three applications were awaiting a detailed statement by the applicant of the plan of reclamation proposed, and two were under consideration in the Survey.

*Enlarged-homestead designations.*—The designation of additional nonirrigable areas as subject to entry under the enlarged-homestead act and the refinement of the boundaries of such areas has called for an increasing amount of field investigation during the year. As the larger areas of nonirrigable lands were included in the earlier designations, the amount of additional land designated is relatively small in proportion to the total area open to entry. By the act of Congress of June 17, 1910, the provisions of the original act, somewhat modified, were extended to the State of Idaho, both as regards the enlargement of the entry and as regards nonresidence on lands that are without a sufficient supply of water suitable for domestic purposes. A large area in Idaho has been designated under the general provisions of the act, and detailed investigations of specific tracts for the determination of the water supply available for domestic purposes are in various stages of completion.

The following table indicates the amount designated in each State and summarizes the work of the year:

*Enlarged-homestead designations, fiscal year 1910–1911, in acres.*

| State. | Outstanding July 1, 1910. | New designations during fiscal year. | Cancellation during fiscal year. | Outstanding June 30, 1911. |
|---|---|---|---|---|
| Arizona | 26,657,280 | 90,400 | 157,763 | 26.589,917 |
| Colorado | 20,303,720 | 50,789 |  | 20,354,509 |
| Idaho: |  |  |  |  |
| Under sections 1-5 of the act |  | 5,347,383 | 10,545 | 5,336,838 |
| Under section 6 of the act |  | 3,841 |  | 3,841 |
| Montana | 29,686.126 | 2,167,404 |  | 31,853.530 |
| Nevada | 49,512,960 |  |  | 49,512,960 |
| New Mexico | 15,883,343 | 423,332 |  | 16,306,675 |
| Oregon | 9,166,960 | 2,071,661 | 24,960 | 11,213,661 |
| Utah: |  |  |  |  |
| Under sections 1-5 of the act | 6,654,469 | 111,311 |  | 6,765,780 |
| Under section 6 of the act | 1,245,818 | 129,129 |  | 1,374,947 |
| Washington | 3,401,816 | 1,080 |  | 3,402,896 |
| Wyoming | 16,904,673 | 634,268 |  | 17,538,941 |
|  | 179,417,165 | 11,030,598 | 193,268 | 190,254,495 |

*Enlarged-homestead petitions.*—The greater part of the investigations and designations under the enlarged-homestead act have been made in response to petitions for action on specific tracts. During the fiscal year 248 petitions were received and 162 were acted upon. At the close of the year 137 petitions were pending, most of them awaiting reports on uncompleted field examinations. The geographic distribution of these petitions among the 10 States now affected by the act is shown in the table on page 72.

*Action on enlarged-homestead petitions during the fiscal year ending June 30, 1911.*

| State. | Outstanding July 1, 1910. | Received during the year. | Designations made. |  | Refused. | Total acted on. | Pending. |
|---|---|---|---|---|---|---|---|
|  |  |  | All. | Part. |  |  |  |
| Arizona | 1 | 2 | 1 | 0 | 1 | 2 | 1 |
| Colorado | 0 | 11 | 6 | 0 | 0 | 6 | 5 |
| Idaho | 0 | 99 | 12 | 6 | 2 | 20 | 79 |
| Montana | 28 | 59 | 25 | 17 | 21 | 63 | 24 |
| Nevada | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| New Mexico | 8 | 31 | 18 | 5 | 5 | 28 | 11 |
| Oregon | 2 | 24 | 8 | 8 | 2 | 18 | 8 |
| Utah | 1 | 5 | 2 | 0 | 1 | 3 | 3 |
| Washington | 2 | 2 | 1 | 0 | 0 | 1 | 3 |
| Wyoming | 9 | 15 | 2 | 17 | 2 | 21 | 3 |
|  | 51 | 248 | 75 | 53 | 34 | 162 | 137 |

### COOPERATION WITH OTHER BUREAUS OF THE DEPARTMENT.

Important action taken during the year to promote the efficient and economical handling of public-land questions has consisted of the adoption of a plan of cooperation between the Geological Survey and the General Land Office. The Land Office has a field force engaged in investigating the validity of entries on public land and in preventing land frauds against the Government. The decision of many of the cases investigated by the field service depends upon the mineral or the water-power value of the land, and the members of the field force make examination on the ground to determine these values. As a rule the Geological Survey has sufficiently definite information with regard to the mineral or water-power value either to obviate the necessity of an examination by the Land Office field service or to facilitate to a considerable degree the making of such examination. This information, in so far as it relates to coal, was placed at the disposal of the Land Office by an agreement that was embodied in a circular of that office, dated July 9, 1910, in which it is provided that before the Land Office shall make field examination of lands involved in certain cases the Geological Survey shall be requested to furnish information as to the tracts involved; that the survey shall thereupon promptly transmit to the Land Office such information as it has on record, together with any suggestions that may be of assistance; that if a field examination in any case is made by a member of the Land Office force a copy of his report will be sent to the Geological Survey, and that if this report differs as to facts or conclusions from the information given by the Survey, the Land Office will suspend action upon the case involved until advice is received from the Survey. On January 27, 1911, the Secretary extended the cooperation thus established so that it covers lands valuable for coal, oil, phosphate, and water power. By these agreements the Land

Office profits by the facts that many examinations that would otherwise be required need not be made and that those which are made can be made more advantageously, and the Survey profits by the information obtained from the reports of the General Land Office field agents.

In order to make even more fully available in the administration of the public lands the fund of information on file in the Survey with regard to the character of the public domain, two further orders have been issued by the Secretary. One dated March 27, 1911, directs that before requesting the survey of a proposed town site or the issuance of patent under a tribal allotment, the Office of Indian Affairs shall call upon the Survey for a report as to whether the tract considered is coal, agricultural, or mineral land and whether it has any value for power or reservoir sites; the other, dated April 27, 1911, directs that before lands included within a national forest are restored to the public domain a report shall be required from the Geological Survey as to whether or not the lands are valuable for coal or have possibilities for the development of power.

Requests for information under these various phases of cooperative agreement and other requests similar in character, but not covered by formal agreement, have during the year numbered 10,747 as to mineral lands and 545 as to lands having power value. Of the former requests 2,722 have been answered and of the latter 369. The distribution of the lands involved in the requests for information regarding mineral character is shown in the following table:

*Requests for information regarding mineral character of public lands.*

| State. | Received. | Information furnished. | Pending. |
|---|---|---|---|
| Alaska | 69 | 60 | 9 |
| Arizona | 125 | 1 | 124 |
| California | 3,461 | 181 | 3,280 |
| Colorado | 165 | 59 | 106 |
| Florida | 28 | 14 | 14 |
| Idaho | 193 | 142 | 51 |
| Iowa | 1 | 0 | 1 |
| Louisiana | 14 | 14 | 0 |
| Montana | 1,783 | 558 | 1,225 |
| Minnesota | 4 | 2 | 2 |
| Nebraska | 6 | 5 | 1 |
| Nevada | 21 | 2 | 19 |
| New Mexico | 708 | 628 | 80 |
| North Dakota | 857 | 258 | [a] 586 |
| Oregon | 431 | 28 | 403 |
| South Dakota | 301 | 145 | 156 |
| Utah | 1,009 | 261 | 748 |
| Washington | 241 | 125 | 116 |
| Wyoming | 1,330 | 239 | 1,091 |
|  | 10,747 | 2,722 | 8,012 |

[a] 13 cases recalled by General Land Office.

During the year the board has acted on 854 reports of the Land Office field force on the mineral character of lands, involving an area of 125,800 acres. The table below shows in detail the action taken on these cases. Fifty-two reports as to the water-power value of lands have been considered, leaving 39 pending at the close of the year.

*Action on reports of Land Office field service regarding the mineral character of lands.*

| State. | Approved. | | Approved in part. | Disapproved. | | Pending. | | Total. | |
|---|---|---|---|---|---|---|---|---|---|
| | Number. | Area. | | Number. | Area. | Number. | Area. | Number. | Area. |
| Arkansas | 0 | .......... | .......... | 3 | 360 | .......... | .......... | 3 | 360 |
| California | 4 | 400 | .......... | 0 | .......... | 20 | 6,640 | 24 | 7,040 |
| Colorado | 59 | 8,180 | 1 | 13 | 1,960 | 14 | 1,840 | 87 | 11,980 |
| Florida | 62 | 7,660 | .......... | 0 | .......... | 3 | 200 | 65 | 7,860 |
| Idaho | 108 | 14,840 | .......... | 0 | .......... | 14 | 1,960 | 122 | 16,800 |
| Louisiana | 4 | 280 | .......... | 0 | .......... | 10 | 1,320 | 14 | 1,600 |
| Montana | 54 | 10,000 | .......... | 4 | 320 | 50 | 7,440 | 108 | 17,760 |
| New Mexico | 28 | 4,160 | .......... | 1 | 80 | 1 | 120 | 30 | 4,360 |
| North Dakota | 11 | 1,360 | .......... | 9 | 1,120 | 6 | 840 | 26 | 3,320 |
| Oregon | 20 | 2,480 | .......... | 0 | .......... | 44 | 15,420 | 64 | 17,900 |
| South Dakota | 10 | 1,480 | .......... | 0 | .......... | .......... | .......... | 10 | 1,480 |
| Utah | 35 | 4,920 | 3 | 3 | 1,280 | 127 | 23,560 | 168 | 29,760 |
| Washington | 407 | 62,920 | .......... | 1 | 80 | 2 | 120 | 410 | 63,120 |
| Wyoming | 8 | 1,120 | .......... | 6 | 760 | 38 | 4,400 | 52 | 6,280 |
| | 810 | 119,800 | 4 | 40 | 5,960 | 329 | 63,860 | 1,183 | 189,620 |

## DIVISION OF ALASKAN MINERAL RESOURCES.

The work of the division of Alaskan mineral resources was carried on under an appropriation of $90,000 for "continuation of the investigation of the mineral resources of Alaska." Under this authority, as in previous years, work of the following classes was carried on: Reconnaissance and detailed geologic surveys; special investigations of mineral resources; reconnaissance and detailed topographic surveys; investigations of water resources with reference to the supply available for placer mining; and collection of statistics on mineral production.

### PERSONNEL.

The personnel of the division varied greatly during the year on account of transfers of employees to and from other divisions and on account of temporary employment of additional technical and clerical assistants. On July 1, 1910, there were employed in the division 1 geologist in charge, 9 geologists, 7 topographers, 2 engineers, and 3 clerks on annual salaries, 1 topographer on monthly salary, 1 temporary clerical assistant, 2 geologic field assistants, and 26 camp hands. Of the topographers 4 were employed in subdivisional surveys paid for by the General Land Office. (See pp. 82–84.) On June 30, 1911, the personnel of the division included 1 geologist in charge, 12 geologists, 4 topographers, 2 engineers, 1 draftsman, and 3 clerks on annual salaries, 1 geologist on per diem salary, 2 geologic field assistants, and 31 camp hands. During the year there were also employed 1 geologist and 1 clerk, and for short periods several clerical assistants who are not included in the above enumeration.

### FIELD OPERATIONS IN SEASON OF 1910.

*Allotments and areas covered.*—Twelve parties were engaged in surveys and investigations in Alaska during the season of 1910 for varying periods between April 1 and October 17. Four parties were also employed in subdivisional surveys of public lands. (See pp. 82–84.) In addition to these the geologist in charge spent a part of the summer in Alaska carrying on geologic investigations and visiting field parties.

During the year 13,815 square miles were covered by reconnaissance topographic surveys and 36 square miles by detailed topographic surveys.[1] Detailed geologic surveys were made of 321 square miles and geologic reconnaissance surveys of 8,635 square miles. Most of the geologists also spent considerable time in studying special problems connected with the mineral deposits. The investigation of the water supply in placer districts covered an area of approximately 6,500 square miles and included 69 gaging stations maintained and 429 measurements of stream volume. Fifteen of the thirty mining districts of Alaska which are being developed were visited by members of the staff. The following table shows the allotment of the appropriation to the different districts of Alaska. These figures include the cost of both field and office work, as well as inspection.

*Allotments to surveys and investigations in Alaska, 1910–11.*

| | |
|---|---|
| Southeastern Alaska | $5, 100 |
| Copper River and Susitna region | 27, 000 |
| Matanuska region | 9, 600 |
| Upper Yukon basin | 23, 800 |
| Innoko-Iditarod region | 14, 100 |
| Northwestern Alaska, including Seward Peninsula | 10, 400 |
| | 90, 000 |

The following table shows approximately the amount of money devoted to each class of investigation. It is not possible to give the exact figures, for some of the parties and some of the men carried on two different kinds of work; but this statement will help to elucidate the table given on page 76, which summarizes the complete areal surveys.

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[1] Reconnaissance surveys published on a scale of 1 : 250,000 or 1 : 500,000 and detailed surveys on a scale of 1 : 62,500.

*Approximate allotment of funds to different classes of surveys and investigations in Alaska, 1910–11.*

| | |
|---|---|
| Geologic reconnaissance surveys | $26,500 |
| Detailed geologic surveys | 11,500 |
| Special geologic investigations | 2,500 |
| Topographic reconnaissance surveys | 32,000 |
| Detailed topographic surveys | 1,600 |
| Investigation of water resources | 4,600 |
| Collection of statistics of mineral production | 1,100 |
| Miscellaneous expenditures, including clerical salaries, administration, inspection, instruments, and office supplies and equipment | 10,200 |
| | 90,000 |

*Allotments for salaries, field and office expenses, 1910–11.*

| | |
|---|---|
| Scientific and technical salaries | $29,330 |
| Field expenses, including equipment and supplies | 51,765 |
| Clerical and other office salaries | 8,905 |
| | 90,000 |

The following table exhibits the progress of investigations in Alaska and the annual grant of funds since systematic surveys were begun in 1898. It should be noted that a variable amount is expended each year on special investigations that yield results which can not be expressed areally.

*Progress of surveys in Alaska, 1898–1910.*[a]

| Year. | Appropriation. | Areas covered by geologic surveys. | | | Areas covered by topographic surveys.[b] | | | | Water-resources investigations. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Exploratory (scale 1:625,000 or 1:1,000,000). | Reconnaissance (scale 1:250,000). | Detailed (scale 1:62,500). | Exploratory (scale 1:625,000 or 1:1,000,000). | Reconnaissance (scale 1:250,000; 200-foot contours). | Detailed (scale 1:62,500; 25, 50, or 100 foot contours). | Lines of levels. | Bench marks set. | Gaging stations maintained part of year. | Stream volume measurements. |
| | | *Sq. m.* | *Sq. m.* | *Sq. m.* | *Sq. m.* | *Sq. m.* | *Sq. m.* | *Miles.* | | | |
| 1898 | $46,189.60 | 9,500 | ........ | ........ | 12,840 | 2,070 | ........ | ........ | ........ | ........ | ........ |
| 1899 | 25,000.00 | 6,000 | ........ | ........ | 8,690 | ........ | ........ | ........ | ........ | ........ | ........ |
| 1900 | 60,000.00 | 3,300 | 6,700 | ........ | 630 | 11,150 | ........ | ........ | ........ | ........ | ........ |
| 1901 | 60,000,00 | 6,200 | 5,800 | ........ | 10,200 | 5,450 | ........ | ........ | ........ | ........ | ........ |
| 1902 | 60,000.00 | 6,950 | 10,050 | ........ | 8,330 | 11,970 | 96 | ........ | ........ | ........ | ........ |
| 1903 | 60,000.00 | 5,000 | 8,000 | 96 | ........ | 15,000 | ........ | ........ | ........ | ........ | ........ |
| 1904 | 60,000.00 | 4,050 | 3,500 | ........ | 800 | 6,480 | 480 | 86 | 19 | ........ | ........ |
| 1905 | 80,000.00 | 4,000 | 4,100 | 536 | ........ | 4,880 | 787 | 202 | 28 | ........ | ........ |
| 1906 | 80,000.00 | 5,000 | 4,000 | 421 | ........ | 13,500 | 40 | ........ | ........ | 14 | 286 |
| 1907 | 80,000.00 | 2,600 | 1,400 | 442 | ........ | 6,120 | 501 | 95 | 16 | 48 | 457 |
| 1908 | 80,000.00 | 2,000 | 2,850 | 604 | ........ | 3,980 | 427 | 76 | 9 | 53 | 556 |
| 1909 | 90,000.00 | 6,100 | 5,500 | 450 | 6,190 | 5,170 | 444 | ........ | ........ | 81 | 703 |
| 1910 | 90,000.00 | ........ | 8,635 | 321 | ........ | 13,815 | 36 | ........ | ........ | 69 | 429 |
| | 871,189.60 | 60,700 | 60,535 | 2,870 | 47,680 | 99,585 | 2,811 | 459 | 72 | ........ | ........ |
| Percentage of total area of Alaska | | 10.35 | 10.33 | 0.49 | 8.16 | 16.98 | 0.48 | ........ | ........ | ........ | ........ |

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[a] The areas presented in this table differ somewhat from those previously published. This is due in part to the reclassification of the work and in part to the fact that the areas have been more carefully scaled from the maps than formerly.

[b] In addition to the above, the International Boundary Survey and the Coast and Geodetic Survey have made surveys of parts of Alaska.

*General investigations.*—A. H. Brooks, geologist in charge of the division, was engaged in office work at Washington until August 3, when he proceeded to Alaska, reaching Valdez on August 15. He spent a day in visiting the Cliff mine, and continued his journey to Seward and thence to Knik, spending two days, while en route, in studying the geology in the vicinity of Kern Creek. From Knik Mr. Brooks proceeded to Mr. Martin's camp, which he reached on August 23. He spent the following two weeks in studying the geology of the Matanuska coal field and then returned to Seward. A day at Knik and several days at Seward were utilized in collecting data to be used for planning subdivisional surveys in this general region. Returning, Mr. Brooks reached Washington on September 30.

Of the time spent in the office the geologist in charge has devoted about 30 days to completing the Mount McKinley report, about 46 days to the progress reports for 1909 and 1910, about 25 days to administration of the subdivisional surveys (see pp. 82–84), and the remainder to routine and miscellaneous work.

R. H. Sargent continued his general supervision of the topographic surveys and map compilation, as in the previous year, but his time up to May 1 has been largely devoted to subdivisional surveys of Alaska public lands.

E. M. Aten continued as office assistant to the geologist in charge and supervised the office work during the latter's absence in the field. He also continued to assist in collecting statistics of the production of precious metals in Alaska.

The office study of problems relating to the stratigraphy of Tertiary coal measures in Alaska was continued by W. W. Atwood during such time as he could spare from his college work. As the correlating of the coal measures of different parts of the Territory must depend on the determination of their fossil plants, Arthur Hollick was employed for six months in a systematic study of the large collection of paleobotanic material already gathered.

*Southeastern Alaska.*—The detailed geologic mapping and study of the mineral resources of the Eagle River region were completed by Adolph Knopf, who mapped a total area of about 125 square miles.

J. W. Bagley, assisted by C. E. Giffin, spent the time from May 6 to June 6 in detailed topographic mapping in the vicinity of Mendenhall River, thus completing the survey of the Eagle River district.

C. W. Wright was employed from July 6 to September 17 in continuing the preparation of a report on the geology and mineral resources of Kasaan Peninsula and Hetta Inlet region. Unfortunately, he was called back to his professional work in Sardinia before he could complete his report, but he has promised its early completion.

*Copper River and Susitna region.*—D. C. Witherspoon and C. E. Giffin made a topographic reconnaissance survey of the upper Chistochina and Susitna basins, including the Valdez Creek placer district.[a] The party mapped an area of 4,980 square miles.

F. H. Moffit, assisted by B. L. Johnson, made a geologic reconnaissance survey of the southern front of the Alaska Range between the Fairbanks trail and Valdez Creek. Mr. Moffit also made a reexamination of the Chistochina placer district. A geologic reconnaissance map covering about 1,000 square miles was completed, in addition to which the topographic surveys and geologic notes furnished by the Witherspoon party afford a general knowledge of the areal distribution of the principal formations over about 2,000 square miles.

*Prince William Sound and Kenai Peninsula.*—No field work was done in the Prince William Sound and Kenai Peninsula regions other than that accomplished by the geologist in charge (p. 77). U. S. Grant has continued, so far as his collegiate duties permitted, the work of writing a report on the eastern part of Kenai Peninsula.

*Matanuska Valley.*—A detailed geologic survey was made by G. C. Martin, assisted by F. J. Katz and Theodore Chapin, of that part of the Matanuska coal field lying between Moose Creek on the west and Chickaloon River on the east. An area of 196 square miles was surveyed. Mr. Katz, assisted by Mr. Chapin, spent about a week in studying mineral resources of the Willow Creek region.

*Upper Yukon basin.*—No geologic field work was done in the Yukon-Tanana region, but L. M. Prindle spent nine months of the year in preparing a detailed report on the region adjacent to Fairbanks and a more general report on the Fairbanks quadrangle. C. E. Ellsworth and G. L. Parker continued the study of the water resources of the Yukon-Tanana region which was begun in 1907. They began field work at Fairbanks on April 1 and later extended it into the Birch Creek and Fortymile districts. Mr. Parker continued stream gaging in the Fairbanks and Birch Creek districts until September 1, when he went to Nome (p. 79).

J. W. Bagley, topographer, and S. R. Capps, geologist, carried a topographic and geologic reconnaissance survey from the upper Nenana Valley eastward to Delta River, including the Bonnifield placer district and the Nenana coal field. The area surveyed includes 3,135 square miles and is bounded on the south by the crest of the Alaska Range and on the north by the lowlands of the Tanana Valley.

*Innoko-Iditarod region.*—The continued interest in the placer-gold deposits of the Innoko basin, including the newly discovered Iditarod placers, led to an extension of the work previously done in this field.

G. C. Anderson made a topographic reconnaissance survey of an area of 3,200 square miles, extending southward from Ruby Creek, on the Yukon, across the upper Innoko Valley, and including much of the Iditarod basin. A. G. Maddren, assisted by H. E. Birkner, made a geologic reconnaissance survey of about 2,000 square miles of the most important part of the same region, besides investigating the placers of the Innoko and Iditarod districts.

*Northwestern Alaska.*—A geologic and topographic reconnaissance survey was carried from the Koyukuk to Kobuk River by P. S. Smith and H. M. Eakin. The party landed near the mouth of Hogatza River and traveled overland to Dahl Creek, on the Kobuk. (See p. 81.) A contract had been made to have supplies delivered at this point, but their delivery had been prevented by an accident. The party was therefore forced to abandon the plan of extending the survey northward and made its way down the Kobuk by small boat. This, however, gave opportunity for a hasty visit to the newly discovered Squirrel River placer district. An area of 2,500 square miles was covered by geologic and topographic reconnaissance surveys.

Systematic investigations of the water supply of Seward Peninsula have been carried on each year since 1906. The need of investigations in other parts of Alaska made it impossible to detail an engineer to continue this work in 1910. Through the cooperation of mine operators it has been possible to keep up some gaging stations during the open season of 1910. G. L. Parker also spent the period from September 15 to October 18 in Seward Peninsula in collecting the gage readings furnished by several mine operators and in making stream measurements.

*Collection of statistics.*—The work of collecting statistics of the production of gold, silver, and copper begun in 1906 was continued during the year. The progress report for 1909, completed in July, 1910, and published as Bulletin 442, contained preliminary figures showing the mineral production, which were changed but little when the final report was transmitted in October for inclusion in the Survey's annual volume " Mineral resources of the United States " for the calendar year 1909.

### FIELD OPERATIONS FOR THE SEASON OF 1911.

Under an appropriation of $100,000 fourteen parties were dispatched to Alaska during the months of March, April, May, and June. One geologic and one topographic party are making reconnaissance surveys in the lower Copper River basin. One topographic party is making detailed surveys of the Port Valdez mining district. Two topographic parties and one geologic party are making reconnaissance and detailed geologic surveys in Kenai Peninsula. One geologic party is making a reconnaissance of the

Yentna placer district in the Susitna basin. Two geologic parties are making reconnaissance surveys of the Circle and Rampart quadrangles. Geologic surveys are being made north of Porcupine River, in cooperation with the International Boundary Commission. One party is to make an exploratory survey of the upper Alatna River basin and of the Noatak Valley. The investigation of the water resources of the Fairbanks, Circle, and Fortymile districts is being continued by two engineering parties. The geologist in charge will leave for Alaska in July to visit Prince William Sound, Kenai Peninsula, and the Fairbanks region.

### OFFICE WORK.

During the year five bulletins (Nos. 433, 442, 443, 446, and 449) containing results of the work of the Alaska division have been issued. Four bulletins (Nos. 448, 467, 480, and 485) and one professional paper (No. 70) are in press. All these publications contain maps. There have also been issued as publications for sale two reconnaissance maps, those of the Circle and Fortymile (second edition) quadrangles.

The following manuscripts and maps have been submitted for publication:

Geology and mineral resources of the Eagle River region, by Adolph Knopf, including detailed geologic and topographic maps. (Bulletin 502.)

The Sitka mining district, by Adolph Knopf. (Bulletin 504.)

The headwater region of Gulkana and Susitna rivers, with an account of the Chistochina and Valdez Creek placers, by F. H. Moffit, including geologic and topographic reconnaissance maps. (Bulletin 498.)

Coastal glacers of Prince William Sound and Kenai Peninsula, by U. S. Grant.

Geology and coal fields of the lower Matanuska Valley, by G. C. Martin and F. J. Katz. (Bulletin 500.)

Geology and mineral resources of the Fairbanks quadrangle, by L. M. Prindle and F. J. Katz, including reconnaissance and detailed topographic and geologic maps.

The Bonnifield region, by S. R. Capps, including geologic and topographic reconnaissance maps. (Bulletin 501.)

The surface-water resources of Seward Peninsula, by F. F. Henshaw and G. L. Parker, with an account of the geography and geology by P. S. Smith and of the placer mining by A. H. Brooks, including reconnaissance map.

Topographic map of Kasaan Peninsula region; scale, 1:62,500; contour interval, 50 feet. Topography by R. H. Sargent, D. C. Witherspoon, and J. W. Bagley.

Topographic map of Copper Mountain and vicinity; scale, 1:62,500; contour interval, 50 feet; by R. H. Sargent.

The following reports are in hand:

Geology and ore deposits of Kasaan Peninsula and the Copper Mountain region, Prince of Wales Island, by C. W. Wright, including detailed geologic and topographic maps.

Geology of Glacier Bay and Lituya region, by F. E. Wright and C. W. Wright, including geologic reconnaissance maps.

Geology and mineral resources of the southern part of Kenai Peninsula, by U. S. Grant and D. F. Higgins, including geologic reconnaissance maps.

The Koyukuk-Chandalar gold region, by A. G. Maddren, including geologic and topographic reconnaissance maps.

The Iditarod-Innoko region, by A. G. Maddren, including geologic and topographic reconnaissance maps.

Geology of the Nome and Grand Central quadrangles, by F. H. Moffit and Philip S. Smith, including detailed geologic map.

The following topographic maps have been completed during the year and are in process of publication as illustrations to reports:

Map of Eagle River region, by J. W. Bagley; scale, 1:62,500; contour interval, 50 feet.

Reconnaissance map of headwater region of Gulkana and Susitna rivers, by D. C. Witherspoon and C. E. Giffin; scale, 1:250,000; contour interval, 200 feet.

Reconnaissance map of Bonnifield region, by J. W. Bagley; scale, 1:250,000; contour interval, 200 feet.

### GEOLOGIC RESULTS.

Mr. Moffit's studies in the upper Gulkana and Susitna basins show that the auriferous slates of this region are of Mesozoic age and that the mineralization is probably genetically related to intrusive granites and diorites. In the Matanuska region Mr. Martin and Mr. Katz have divided the Eocene, formerly mapped as a unit, into three formations. They have also found extensive strata of fossiliferous Cretaceous and Jurassic rocks in this field. Their studies have shown that there is a zone of intense deformation along the southern margin of the Talkeetna Mountains and that pronounced disturbances, including a large number of thrust faults, took place in post-Eocene time. Mr. Maddren had found that the gold of the Iditarod placer district is closely associated with intrusive rocks. In the Bonnifield region Mr. Capps has been able to divide the crystalline schists into two groups—an older, probably of pre-Ordovician age, made up chiefly of metamorphosed sediments, and a younger, composed largely of altered igneous rocks, probably of Paleozoic age. He has also found some evidence that the heavy terrace gravel deposits of this district may be preglacial. Mr. Smith and Mr. Eakin have traced the Cretaceous rocks of the lower Koyukuk into the Kobuk Valley. They have also found that the Squirrel River placers, in this region, occur in association with metamorphic rocks similar to those of the Seward Peninsula. Mr. Hollick's studies of the coal-measure floras are not yet complete. It appears probable, however, that the coal-bearing rocks, hitherto classed as Kenai, may on account of their contained floras be divided into three groups, of which the oldest will be Cretaceous, the middle true Kenai (Eocene), and the youngest post-Eocene.

### SURVEY OF PUBLIC LANDS.

*Plans, personnel, etc.*—An item in the sundry civil act approved June 25, 1910, provided "for the survey of the lands in the United States in the District of Alaska, $100,000." In accordance with instructions the Director of the Geological Survey, on June 25, 1910, submitted plans for the surveys authorized by this item to the Secretary of the Interior through the Commissioner of the General Land Office. These plans were approved by the Commissioner and by the Secretary on June 29. In a letter dated June 29 the Director instructed the geologist in charge of the division of Alaskan mineral resources to put the plans into execution.

The approved plans authorized the following surveys:

1. The astronomic determination of the latitude, longitude, and azimuth in the vicinity of the initial point of the proposed surveys, near Fairbanks.
2. Time permitting, the astronomic determination of latitude, longitude, and azimuth at another point near the mouth of Tanana River, which might be used as a reference point for future surveys in this district.
3. The establishment of a triangulation system in the vicinity of Fairbanks, by which the location of land lines and corners could be accurately determined and which could also be so developed as to permit extensions into other areas where subdivisional surveys are needed.
4. The extension of a base and meridian from the initial point near Fairbanks.
5. The survey of such township exteriors as were considered desirable.
6. Time permitting, the subdivision of these townships.
7. The making of reconnaissance surveys in the Copper River, Seward, and Matanuska regions to obtain information on which to plan surveys in these provinces.

As provided in the plans submitted, the Superintendent of the Coast and Geodetic Survey detailed the engineers required to make determinations of latitude, longitude, and azimuth at Fairbanks and at the mouth of the Tanana.

R. H. Sargent, topographer, was put in charge of the field parties at Fairbanks. C. L. Nelson, W. N. Vance, and S. G. Lunde, topographers, were detailed to assist Mr. Sargent. In addition to these four engineers, who were detailed from the permanent staff of the Geological Survey, four chainmen and one recorder accompanied the party from Seattle. At Fairbanks 21 other men were engaged as rodmen, axmen, packers, cooks, and in other minor capacities.

The personnel of the two line parties and the triangulation party were as follows:

Line parties:
- 1 engineer in charge.
- 4 chainmen.
- 2 flagmen.
- 3 axmen.
- 1 cook.
- 1 teamster.

Triangulation party:
- 1 engineer in charge.
- 1 axman.
- 1 packer.
- 1 cook.
- 1 recorder.

Mr. Sargent was directed, after starting the work at Fairbanks, to proceed by trail to Valdez and make the investigations along this route that were necessary to procure information required for planning future work in this field.

Mr. Brooks undertook similar investigations in the northeastern part of Kenai Peninsula and in the Matanuska region.

Although the money was not available for these surveys until July 1, the parties sailed from Seattle on July 5, arrived at Fairbanks on July 22, and began work on the following day. Mr. Sargent organized the work at Fairbanks and then returned to the coast by way of the Valdez trail, making investigations on the way for land surveys in this district. Mr. Brooks spent a month in the Kenai Peninsula and Seward Peninsula, devoting a part of the time to collecting information to be used in planning land surveys in this district. The other parties continued work in the Fairbanks district until about the middle of October. The office work was completed after the return of the field parties, and on May 15, 1911, the resulting plats and notes were transmitted to the Commissioner of the General Land Office. The total expenditure for this work was $35,132.27.

*Astronomic determinations.*—An astronomic determination of latitude, longitude, and azimuth was made at a station near Fairbanks by the Coast and Geodetic Survey. A similar determination was made at Tanana, a settlement on the west bank of the Yukon, at the mouth of Tanana River. This work was done in accordance with the approved plans and with an agreement made between the Secretary of the Interior and the Secretary of Commerce and Labor, under date of July 5, 1910. The Superintendent of the Coast and Geodetic Survey transmitted the results of the final computations of these observations on February 6, 1911.

*Triangulation.*—A base line was measured and a system of triangulation was established, the geodetic position of which was based on the astronomic observations. This triangulation not only checked the line surveys, but can also be extended into adjacent parts of the

Tanana Valley to provide points from which land surveys of important areas may be made in the future. By this means the projection of long standard parallels and guide meridians through areas of no commercial importance will be avoided.

The primary triangulation stations are marked by bronze tablets, furnished by the General Land Office, firmly set in concrete or solid rock. In preparation for the future expansion of the triangulation system six signals have been constructed on prominent hills in the Tanana Valley.

*Summary of triangulation.*

| | |
|---|---|
| Base line measured feet | 13,876,674 |
| Primary stations occupied | 12 |
| Secondary stations occupied | 15 |
| Points intersected | 3 |
| Signals constructed | 6 |

*Line work.*—The line work consisted chiefly of extending base and meridian lines and the survey of township exteriors. Some section lines and a few meanders were also run. The geodetic position of the initial point was determined by triangulation. It seemed desirable not to attempt the sectionizing of the townships until the matter of the rights of the homesteaders had been settled.

*Summary of line surveys.*

| | Miles. |
|---|---|
| Principal meridians | 23.7 |
| Base line | 18 |
| Township exteriors | 43.7 |
| Section lines | 11.8 |
| Meanders | 11.7 |
| | 108.9 |

It was impossible to ship iron posts to Fairbanks in time to make them available for the season's work. Wooden posts were therefore set, properly inscribed and witnessed in accordance with the regulations of the General Land Office.

The number of corners set was as follows:

*Corners set.*

| | |
|---|---|
| Initial point | 1 |
| Township corners | 7 |
| Standard township corners | 3 |
| Closing township corners | 3 |
| Section corners | 76 |
| Quarter corners | 86 |
| Meander corners | 8 |
| Witness corners | 8 |

## DIVISION OF MINERAL RESOURCES.

The work of the division of mineral resources consists primarily of the preparation of the annual report on the mineral resources of the United States. This work was organized under the act of August 7, 1882, authorizing the United States Geological Survey to procure statistics in relation to mines and mining. Since that time the reports have appeared annually, except that the data for 1883 and 1884 were published in one volume and those for 1889 and 1890 in one volume. Since 1907, on account of the increase in the quantity of material available for publication, it has been necessary to publish the report in two volumes. At first only the more important lines of inquiry were taken up and the statistics were largely estimates. As the work progressed and the mineral industries increased in importance the necessity for more accurate statistics became more apparent, the character of the publication changed, and for many years this report has been an annual census of the mineral industries.

The plan pursued in the first report—that of publishing chapters devoted to each mineral, prepared by or under the supervision of some one who makes a special study of the subject, rather than chapters devoted to each State—has never been changed. The practice of publishing in pamphlet form each chapter for distribution to those especially interested in the subject has been carried out from the second report. This practice permits early publication and also makes for economy in printing, as generally correspondents, especially producers, are interested in only one or two subjects. The publication of separate chapters also permits the information on any particular subject to be distributed as soon as it is ready. The complete report can be published only after the last chapter is ready, but all the information contained in the report has already been given to the public, some of it months before.

In the desire to carry out the section of the organic act of the Survey providing for the examination of the mineral resources and products of the national domain, the study of the occurrence and utilization of the economic minerals of the country has been taken up in addition to the compilation of the statistics of production. As a result of this work maps have been published showing the coal fields, the oil and gas fields, and the iron-ore regions of the United States, and similar maps showing the distribution of other minerals are in preparation. The policy is to make the volumes of "Mineral resources" a cyclopedia of information relative to the sources of our mineral production, including a study of the reserves available for future use, and a discussion of their application to the needs of man.

Cooperation between the United States Geological Survey and the State geological surveys in collecting mineral statistics in many of the States was resumed for 1910. For 1909 it had been suspended on account of the cooperative arrangement made by the Survey with the Bureau of the Census. This cooperation with the State surveys has the primary object of saving labor for the producers, who can make one report that will serve for both organizations. A secondary result is that by this cooperation the statistics of production obtained by the State and Federal surveys are believed to be more accurate and are in exact agreement. On the whole this plan has been satisfactory and its continuance is believed to be to the advantage of all concerned.

During the fiscal year the work of the division consisted of the preparation of reports on mineral resources of the United States for the calendar years 1909 and 1910. The statistics for 1909 were collected in cooperation with the Bureau of the Census. In accordance with the agreements between the two bureaus, approved by the Secretary of Commerce and Labor and the Secretary of the Interior, the field work of collecting the statistics was done by the Bureau of the Census by personal visits of a large force of agents. It was thought that this plan would greatly expedite the work. Experience showed, however, that it took very much longer to get the data in this way than it would have taken by correspondence, the usual method pursued by the Survey. The following table gives the estimated percentage of schedules returned at the close of the fiscal years 1909, 1910, and 1911 for some of the more important products, the period covered by the returns being the preceding calendar year:

*Percentage of schedules returned from producers at end of fiscal years 1909, 1910, and 1911.*

| Industry. | June 30, 1909. | June 30, 1910. | June 30, 1911. |
|---|---|---|---|
| Building stone | 97 | 26 | 90 |
| Clay working | 98 | 35 | 95 |
| Coal | 98 | 26 | 99 |
| Coke | 100 | 15 | 100 |
| Iron ore | 100 | 24 | 100 |
| Natural gas | 90 | 43 | 80 |
| Quicksilver | 99 | 33 | 100 |

In consequence of the tardy receipt of the schedules for 1909 the report for that year, to be published in two volumes, has not yet appeared, though both parts are well advanced toward completion in the hands of the printer. At the beginning of the present calendar year preliminary estimates of the production in 1910 of coal, cement, petroleum, gold, silver, copper, lead, and zinc were given to the public through the press. Advance preliminary statements of the production of copper, lead, and zinc in 1910 have also been published.

Advance chapters from the report for 1910 have been published as follows: Asbestos, Fuller's earth, Graphite, Mica, Monazite, Potash salts, and Quartz and feldspar. The following were in the hands of the printer at the close of the year: Chromic iron ore, Coke, Gypsum, Sand-lime brick, and Talc and soapstone.

The cooperative plan carried on between this division and the division of geology for several years was continued to the mutual advantage of both. By this plan geologists are assigned to supervise the compilation of the statistical data relating to certain mineral products and to prepare the reports on these products. This plan gives to the statistical work the benefit of the cooperation of the geologist trained in economic work and gives to the geologist the opportunity to study the industrial and commercial conditions which affect the demand for the minerals. This method is also economical because the work for the division of mineral resources does not require the entire time of the geologist, but allows him opportunity to engage in his scientific pursuits, thus permitting the division to pay simply for the actual cost of its work.

The number of permanent employees in Washington who devote their entire time to the work of the division is 28. In addition 13 members of the division of geology devote a portion of their time to the work of this division and 7 persons are employed in the offices of the Survey outside of Washington, making a total of 48 persons engaged on the work under appointments from the Secretary of the Interior.

Three offices are maintained in the West, at Denver, Salt Lake City, and San Francisco, where the local representatives gather statistics and other data for the division and disseminate information.

E. W. Parker continued as administrative head of the division, and Waldemar Lindgren exercised supervision over the preparation of chapters on metalliferous ores. In addition to his administrative duties Mr. Parker has prepared reports on the production of coal, the manufacture of coke, and the briquetting industry for 1909. E. S. Bastin prepared reports on quartz and feldspar and graphite; E. F. Burchard on barytes and strontium, cement, fluorspar, and cryolite, glass sands and other sands, gypsum, iron ore, manganese and manganiferous ores, mineral paints, and stone; B. S. Butler on copper; D. T. Day on asphaltum and bituminous rock, and natural gas and petroleum; J. S. Diller on asbestos and talc and soapstone; J. P. Dunlop on secondary metals; F. L. Hess on antimony, arsenic, bismuth, nickel, cobalt, and steel-hardening metals; H. D. McCaskey on gold, silver, and copper in the Central States and the Eastern States;

Jefferson Middleton on clay, clay-working industries, fuller's earth, and sand-lime brick; W. C. Phalen on abrasive materials, aluminum and bauxite, bromide, potash salts, sodium salts, and sulphur and pyrite; C. E. Siebenthal on lead and zinc; D. B. Sterrett on gems and precious stones, mica, and monazite and zircon; F. B. Van Horn on phosphate rock, and C. G. Yale on borax and magnesite. A few unimportant changes in the assignments have been made for the fiscal year 1912. In addition to his reports Mr. McCaskey has general supervision of the offices of this division in the Western States. These offices are under the direct charge of the following persons: Denver, C. W. Henderson; Salt Lake City, V. C. Heikes; San Francisco, C. G. Yale.

### DIVISION OF CHEMICAL AND PHYSICAL RESEARCH.

In the chemical laboratory 440 quantitative analyses and 838 qualitative determinations, chiefly of minerals sent in for examination by persons not connected with the survey, were reported during the year.

G. F. Becker has been engaged chiefly in studying the bearing of radioactivity upon geologic phenomena and has practically completed an investigation of the cooling of a radioactive earth. As an incident to this investigation he has discovered a whole system of novel and extremely efficient formulas for mechanical quadratures. He has also completed a biographic notice of Samuel Franklin Emmons for the American Institute of Mining Engineers.

F. W. Clarke has been engaged mainly in revising the Data of Geochemistry, the republication of which has been made desirable by the large use of this bulletin in educational institutions and by professional students of geology.

Chase Palmer made a number of analyses of rocks and minerals and continued his study of the surface waters of the United States.

R. C. Wells, besides assisting in the analytical work of the chemical laboratory, collaborated with C. E. Van Orstrand, of the physical laboratory, in his experiments on the diffusivity of metals by electroplating the metallic junctions. His research work consisted of a study of the fractional precipitation of metallic carbonates with reference to problems of ore deposition. Special determinations concerning ore deposition were made for several of the Survey geologists. The following papers by Mr. Wells were published during the year: "The sensitiveness of the colorimetric estimation of titanium," "The rôle of hydrolysis in geological chemistry," and, jointly with F. L. Hess, a paper describing an occurrence of the mineral strüverite and its analysis by a new method.

George Steiger gave most of his time to routine quantitative analyses. He represented the laboratory at the meetings of the committee to award contracts for supplies for 1911 and 1912 and made a study of the composition of muscovite and prepared a short paper on the subject.

W. T. Schaller devoted his time largely to routine analyses consisting of qualitative chemical and mineralogical determinations, as well as quantitative rock analyses. He published descriptions of the minerals barbierite and mosesite and analyzed and described for publication three additional new minerals—beaverite, from Utah; hinsdalite, from Colorado; and ferritungstite, from Washington. He also analyzed and described a number of rare minerals, among them pucherite, bismite, and cuprodescloizite, from California, and thaumasite, plumbojarosite, corkite, and variscite, from Utah. Crystallographic studies were made on ferberite from Colorado, wurtzite and variscite from Utah, and several minerals from Hawaii. A new silicate mineral from New Jersey and a new copper phosphate from Virginia were investigated, and a theoretical study of the rutile group was continued and extended. The relations of podolite to dahllite, of stelznerite to antlerite, and of the members of the alunite group were investigated. Mr. Schaller visited mineral collections in New York City and in Dover and Trenton, N. J., making a special study of the California tourmalines with a view to finishing a paper on that subject. He published the following papers during the year:

Ludwigite from Montana: Am. Jour. Sci., 4th ser., vol. 30, 1910, p. 146.

Mosesite, a new mercury mineral from Terlingua, Tex. [with F. A. Canfield and W. F. Hillebrand]: Idem, p. 202.

The probable identity of podolite with dahllite; the identity of stelznerite with antlerite: Idem, p. 309.

Barbierite, a monoclinic soda feldspar: Idem, p. 358.

Natramblygenite, a new mineral: Am. Jour. Sci., 4th ser., vol. 31, 1911, p. 48.

Thaumasite from Beaver County, Utah [with B. S. Butler]: Idem, p. 131.

Bismuth ochers from San Diego County, Cal.: Jour. Am. Chem. Soc., vol. 33, 1911, p. 162.

Axinit von Californien: Zeitschr. Kryst. Min., vol. 48, 1910, p. 148.

Die chemische Zusammensetzung von Jamesonit und Warrenit: Idem, 1911, p. 562.

Krystallographische Notizen uber Albit, Phenakit und Neptunit: Idem, 1911, p. 550.

Wismutocker [with F. L. Ransome]: Idem, 1910, p. 16.

Die Brechungsexponent von Kanada-Balsam: Centralbl. Min., 1910, No. 13, p. 390.

H. A. Lepper was employed as laboratory assistant from July 18 to October 18, 1910. His time was given exclusively to the analysis of phosphate rocks sent in by Eliot Blackwelder and R. W. Richards.

J. G. Fairchild was appointed assistant chemist in the survey and began his duties in the chemical laboratory on November 1. His time was mostly given to the analyses of phosphates, with occasional analyses of minerals and rocks. He also critically investigated methods for the determination of phosphoric acid.

In the physical laboratory C. E. Van Orstrand has continued experiments on the elasticity and diffusivity of metals, the experiments on diffusivity having been carried on in cooperation with Mr. Wells, of the chemical laboratory, and Dr. F. P. Dewey, assayer in the office of the Director of the Mint at Washington. Theoretical work supplementing these investigations has been continued throughout the year. Some time has been given to the preparation of certain mathematical tables which are of general application, but of particular value to the student of geophysics. In this connection a complete ten-place table of the circular sines and cosines to radian argument has been begun, and two tables have been completed. The first consists of 16,000 five-place values of the natural logarithm and the second consists of 2,500 five-place values to radian argument of the circular tangent and cotangent and their logarithms. The last two tables are to be included in the revised edition of "Smithsonian mathematical tables of hyperbolic functions."

## TOPOGRAPHIC BRANCH.

### ORGANIZATION.

The organization of the topographic branch remained the same as at the close of the last fiscal year and is as follows:

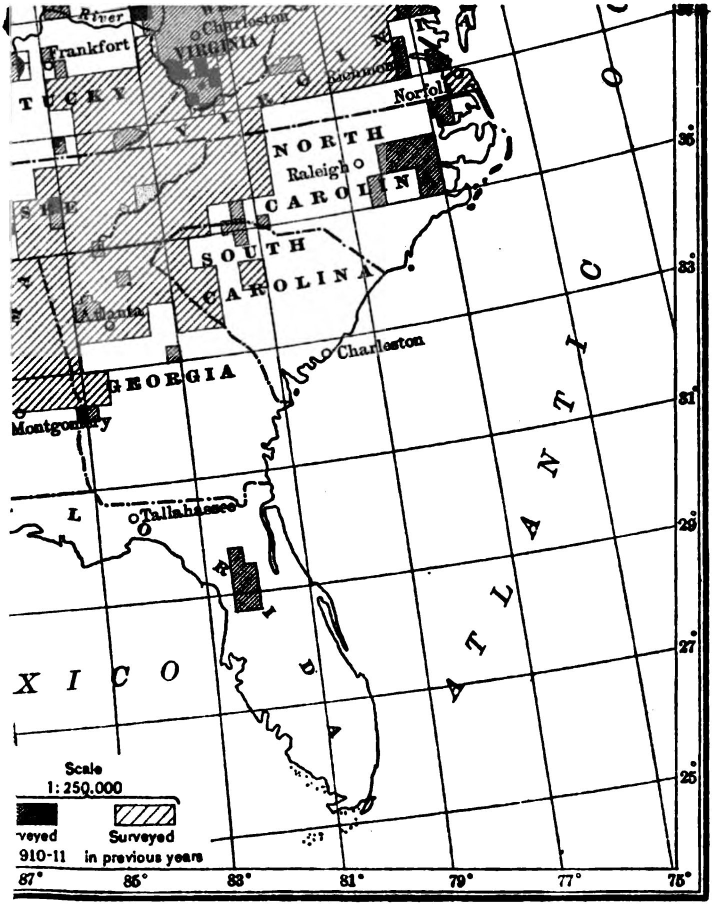
Chief geographer, R. B. Marshall.
Atlantic division, Frank Sutton, geographer in charge.
Central division, W. H. Herron, geographer in charge.
Rocky Mountain division, Sledge Tatum, geographer in charge.
Pacific division, T. G. Gerdine, geographer in charge.
Inspectors of topography: J. H. Renshawe, geographer; W. M. Beaman and F. E. Matthes, topographers.

### PERSONNEL.

The technical corps of the topographic branch was increased during the year by the appointment of 1 topographer, 3 assistant topographers, 21 junior topographers, and 2 draftsmen. It was reduced 26 by transfers, resignations, etc. With these changes the technical force now includes 1 chief geographer, 10 geographers, 47 topographers, 44 assistant topographers, 51 junior topographers, and 9 draftsmen—a total of 162. In addition to the above, 68 technical field assistants were employed during a whole or a part of the field season. One geographer and 7 topographers are on leave without pay.

### PUBLICATIONS.

The work of the topographic branch is represented by 11 publications issued during the year, namely, Bulletins 434, 437, 440, 441, 453, 457, 459, 460, 461, 462, and 463, titles and brief summaries of which are given on pages 27–30. At the end of the year Bulletins



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458, 464, 468, 469, 472, 473, 476, and 477 (Results of spirit leveling in Arkansas, Louisiana, Mississippi, New Mexico, Texas, North Dakota, South Dakota, Kansas, Nebraska, Ohio, and West Virginia, respectively) were at the Government Printing Office nearly ready for publication. In addition, the manuscripts for 9 bulletins were assembled near the close of the fiscal year and transmitted to the editor for publication as Bulletins 466 (Idaho-Washington boundary line), 481 (Results of spirit leveling in California), 482 (Results of spirit leveling in Montana), 486 (Results of spirit leveling in Colorado), 487 (Results of spirit leveling in Idaho), 488 (Results of spirit leveling in Nevada), 489 (Results of spirit leveling in Utah), 493 (Results of spirit leveling in Illinois), and 496 (Triangulation and traverse results for 1909–10). During the year 83 topographic maps were issued, the titles of which are given on page 35.

### GENERAL OFFICE WORK.

In the triangulation and computing section progress maps were kept up to date and new ones were compiled when necessary; field notes in connection with horizontal and vertical control work were catalogued and copied; instructions relating to triangulation, traverse, levels, and the adjustment of instruments were prepared; and work was done in connection with a committee appointed to determine the areas of the several States and of Alaska.

### SUMMARY OF RESULTS.

The condition of topographic surveys to July 1, 1911, distinguished as to scale, etc., is shown on Plate II.

As shown in the following tables, which give the details of topographic mapping and spirit leveling for the fiscal year, the total new area mapped was 23,272 square miles, making the total area surveyed to date in the United States 1,131,037 square miles, or about 37 per cent of the entire country. In addition, 6,460 square miles of revision or resurvey were completed, making the total area of actual surveys for the season 29,732 square miles.

Triangulation stations to the number of 99 were occupied and permanently marked. There were run 3,837 miles of primary traverse, in connection with which 467 permanent marks were set. In the course of the work 22,350 square miles were covered by primary control.

In connection with these surveys 5,998 linear miles of primary levels were run, making the total amount of primary and precise levels run since the authorization of this work by Congress, in 1896, 230,430 miles.

The area covered by topographic surveys in Alaska during the fiscal year 1910–11, as reported in detail on pages 76–79, was 13,851 square miles—36 for publication on the scale of 1:62,500 and 13,815 for publication on the scale of 1:250,000.

Topographic surveys were also carried on in Hawaii, the area mapped during the fiscal year being 224 square miles, part for publication on the scale of 1:31,680 and part for publication on the scale of 1:62,500, making the total area in Hawaii surveyed to date 598 square miles.

*Present condition of topographic surveys of the United States and new areas surveyed in 1910–11.*

| State or Territory. | New area surveyed in 1910–11. | Total area surveyed to June 30, 1911. | Percentage of total area of State surveyed to June 30, 1911. |
|---|---|---|---|
| | *Sq. miles.* | *Sq. miles.* | |
| Alabama | 356 | 18,639 | 36 |
| Arizona | 958 | 64,436 | 57 |
| Arkansas | 245 | 21,043 | 39 |
| California | 6,412 | 99,326 | 63 |
| Colorado | 993 | 42,744 | 41 |
| Connecticut | | 4,965 | 100 |
| Delaware | | 1,008 | 43 |
| District of Columbia | | 70 | 100 |
| Florida | | 1,821 | 3 |
| Georgia | | 17,337 | 29 |
| Idaho | 811 | 19,009 | 23 |
| Illinois | 1,011 | 11,093 | 20 |
| Indiana | 100 | 3,041 | 8 |
| Iowa | 328 | 10,776 | 19 |
| Kansas | | 64,159 | 78 |
| Kentucky | 666 | 17,142 | 42 |
| Louisiana | | 8,283 | 17 |
| Maine | 470 | 8,271 | 25 |
| Maryland | 333 | 11,104 | 90 |
| Massachusetts | | 8,266 | 100 |
| Michigan | 193 | 5,117 | 9 |
| Minnesota | 719 | 4,301 | 5 |
| Mississippi | 38 | 1,834 | 4 |
| Missouri | 351 | 35,043 | 52 |
| Montana | 1,075 | 53,723 | 37 |
| Nebraska | | 25,974 | 34 |
| Nevada | 200 | 50,675 | 46 |
| New Hampshire | | 3,380 | 36 |
| New Jersey | | 8,224 | 100 |
| New Mexico | 1,672 | 33,579 | 27 |
| New York | 698 | 40,919 | 83 |
| North Carolina | | 17,661 | 34 |
| North Dakota | | 9,716 | 14 |
| Ohio | 1,504 | 28,823 | 70 |
| Oklahoma | 14 | 38,691 | 55 |
| Oregon | 391 | 18,670 | 19 |
| Pennsylvania | 794 | 23,607 | 52 |
| Rhode Island | | 1,248 | 100 |
| South Carolina | | 5,640 | 18 |
| South Dakota | 638 | 18,594 | 24 |
| Tennessee | 448 | 20,793 | 40 |
| Texas | | 66,807 | 25 |
| Utah | 480 | 67,905 | 79 |
| Vermont | 139 | 3,676 | 38 |
| Virginia | | 29,980 | 70 |
| Washington | 840 | 21,594 | 31 |
| West Virginia | 50 | 24,170 | 100 |
| Wisconsin | | 11,789 | 21 |
| Wyoming | 345 | 26,371 | 27 |
| | 23,272 | 1,131,037 | |
| Hawaii | 224 | 598 | |

## ATLANTIC DIVISION.

### FIELD WORK.

### SUMMARY.

During the season topographic mapping was carried on in Alabama, Maine, Maryland, Mississippi, New York, North Carolina, Pennsylvania, Tennessee, Vermont, and West Virginia. This work comprised the survey of 11 quadrangles and 1 special area and the resurvey or revision of 7 quadrangles and 2 special areas. In addition, 11 quadrangles were partly surveyed and 6 were partly resurveyed. The total new area mapped was 3,326 square miles—3,148 for publication on the sale of 1:62,500, 80 for publication on the scale of 1:31,680, and 98 for publication on the scale of 1:24,000. The area resurveyed was 1,753 square miles—1,710 for publication on the scale of 1:62,500, 40 for publication on the scale of 1:125,000, and 3 for publication on the scale of 1:12,000. In connection with this work 1,541 miles of primary levels were run and 351 permanent bench marks were established. Profile surveys were also made of 9 rivers, the total distance traversed being 439 miles, and in connection with this work areas aggregating 117 square miles were mapped for publication on the scale of 1:24,000.

Primary triangulation and primary traverse were carried on at different times by four parties, the work being distributed over portions of Georgia, Florida, Maine, Pennsylvania, Tennessee, New York, Virginia, West Virginia, and Delaware. The total area covered by the primary control was about 4,450 square miles, of which 4,000 were controlled by primary traverse, 1,263 miles being run and 188 permanent marks set. Thirty-one triangulation stations were occupied and 24 were marked. The result of this work was to make control available in thirty-one 15-minute quadrangles.

*Topographic surveys in Atlantic division from July 1, 1910, to June 30, 1911.*

| States. | Contour interval. | For publication on scale of— | | | | Total area surveyed. | Primary levels. | | Primary traverse. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1:24,000. New. | 1:62,500. | | 1:125,000. Resurvey. | | Distance run. | Bench marks. | Distance run. | Permanent marks. |
| | | | New. | Resurvey. | | | | | | |
| | *Feet.* | *Sq. mi.* | *Sq. mi.* | *Sq. mi.* | *Sq. mi.* | *Sq. mi.* | *Miles.* | | *Miles.* | |
| Alabama | 10-20 | 61 | 295 | | | 356 | 11 | | | |
| Maine | 20 | 37 | 433 | | | 470 | 38 | 8 | | |
| Maryland | 5-20 | | 333 | | | [1] 336 | 74 | 28 | | |
| Mississippi | 20 | | 38 | | | 38 | 50 | 12 | | |
| New York | 20 | | 698 | 218 | | 916 | 245 | 50 | 84 | 11 |
| North Carolina | 100 | | | | 5 | 5 | | | | |
| Pennsylvania | 20 | | 794 | | | 794 | 41 | 12 | | |
| Tennessee | 5-20-100 | | 368 | 101 | 35 | [2] 584 | 329 | 57 | 478 | 50 |
| Vermont | 20 | | 139 | | | 139 | 55 | 11 | | |
| West Virginia | 20-50 | | 50 | 1,391 | | 1,441 | 327 | 76 | | |
| Delaware | | | | | | | | | 139 | 24 |
| Florida | | | | | | | 278 | 73 | 368 | 84 |
| Georgia | | | | | | | 93 | 24 | 65 | 6 |
| Virginia | | | | | | | | | 129 | 13 |
| | | 98 | 3,148 | 1,710 | 40 | 5,079 | 1,541 | 351 | 1,263 | 188 |

[1] 3 square miles resurveyed in Maryland for publication on scale o f1:12,000.

[2] 80 square miles surveyed in Tennessee for publication on scale of 1:31,680.

### DETAILS OF WORK BY STATES.

*Alabama.*—Under an allotment of $800 made by the State geologist, which was met with an equal amount by the United States Geological Survey, the mapping of the Fayette special area, comprising 61 square miles in Fayette County, was completed by R. H. Reineck, for publication on the scale of 1:24,000, with a contour interval of 10 feet. In addition to the cooperative work, the survey of the Seale quadrangle, in Russell and Lee Counties, was completed by R. D. Cummin and Olinus Smith, the area mapped being 252 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of this area J. M. Rawls and A. F. McNair ran 11 miles of primary levels. (See also pp. 95–96.)

*Delaware.*—For the control of the Seaford and Georgetown quadrangles, in Sussex County, E. L. McNair ran 139 miles of primary traverse and set 24 permanent bench marks.

*Florida.*—The primary control of the Palatka, Interlachen, Hawthorne, and Starke quadrangles, in Bradford, Clay, St. John, Putnam, and Alachua counties, was completed. For this control J. B. Metcalfe and C. W. Arnold ran 278 miles of primary levels and established 73 permanent bench marks; C. B. Kendall, J. H. Wilson, and S. E. Taylor ran 368 miles of primary traverse and set 84 permanent marks.

*Georgia.*—For the control of the White Plains, Eatonton, Greensboro, and Milledgeville quadrangles, in Greene, Hancock, Morgan, Oconee, Oglethorpe, Putnam, and Taliaferro Counties, J. B. Metcalfe and C. W. Arnold ran 93 miles of primary levels and established 24 permanent bench marks; for the control of the White Plains quadrangle C. B. Kendall ran 65 miles of primary traverse and set 6 permanent marks.

*Maine.*—For the continuation of cooperative topographic surveys in Maine the State Survey Commission allotted $4,500 and the United States Geological Survey allotted a like sum. In addition, an allotment of $5,000 was made by the State for river-profile surveys. The survey of the Livermore quadrangle, in Androscoggin, Franklin, Kennebec, and Oxford counties, was completed by Hersey Munroe and Charles Hartmann, jr., the area mapped being 214 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. The survey of the Buckfield and Bryants Pond quadrangles, in Franklin, Oxford, and Androscoggin counties, was begun by Messrs. Hartmann and Munroe, the area surveyed being 219 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of the Livermore and Buckfield quadrangles, Mr. Hartmann and H. P. Kilby ran 38 miles of primary levels and established 8 permanent bench marks. The survey of Dead

River and Sandy River, in Somerset and Franklin counties, was begun by Jay De Puy, the distance traversed being 214 miles, and an area of 37 square miles being topographically mapped, for publication on the scale of 1:24,000, with contour intervals of 5 and 20 feet. The survey of Piscataquis, Pleasant, Schoodic, and Sebec rivers, in Penobscot and Piscataquis counties, and of Silver Lake and Houston Pond, in the same counties, was begun by Olinus Smith, the distance traversed being 183 miles. For the control of the Bethel and Bryants Pond quadrangles, in Oxford County, E. L. McNair occupied 3 triangulation stations.

*Maryland.*—For the continuation of cooperative topographic surveys in Maryland the State geologist allotted $2,000, which was met with a like sum by the Geological Survey. The survey of the Hagerstown quadrangle, in Washington and Frederick Counties, Md., and Franklin County, Pa., and of the Williamsport quadrangle, in Washington County, Md., Berkeley County, W. Va., and Franklin County, Pa., was completed by J. H. Wheat, R. L. Harrison, Olinus Smith, and R. A. Kiger, the total area mapped being 363 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. Of this area 40 square miles lies in Pennsylvania and 50 square miles lies in West Virginia, and the mapping of those portions of the quadrangles was paid for from funds of the respective States. For the control of the Williamsport quadrangle, C. H. Semper ran 17 miles of primary levels and established 6 permanent bench marks in Washington County, Md., 7 miles of primary levels and 3 permanent bench marks in Berkeley County, W. Va., and 3 miles of primary levels and 1 permanent bench mark in Franklin County, Pa. The mapping of the Indian Head and Nanjemoy quadrangles, in Charles County, was begun by R. L. Harrison, the area mapped being 60 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of these quadrangles, A. F. McNair and C. W. Arnold ran 42 miles of primary levels and established 13 permanent bench marks. In addition to the cooperative work in Maryland a special resurvey was made along Potomac River between Lock No. 10 and Great Falls, in the District of Columbia, Montgomery County, Md., and Fairfax County, Va. The area mapped was 3.3 square miles, for publication on the scale of 1:12,000, with a contour interval of 5 feet. This work was done by R. T. Evans, E. P. Davis, C. E. Cooke, and R. L. Harrison. D. H. Baldwin ran 15 miles of primary levels and set 9 permanent bench marks.

*Mississippi.*—The survey of the Iuka quadrangle, in Tishomingo County, Miss., and Colbert and Lauderdale Counties, Ala., was continued by J. F. McBeth, the area mapped being 81 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of this area J. B. Metcalfe and J. M. Rawls ran 50 miles of primary levels and established 12 permanent bench marks. Of the Iuka quadrangle, 43 square miles lies in Alabama.

*New York.*—The State engineer and surveyor of New York allotted $10,000 for the continuation of cooperative topographic surveys in the State and the Federal Survey allotted a like sum for the same purpose. The survey of the New Berlin, Canton, and McKeever quadrangles, in Otsego, Chenango, Madison, St. Lawrence, Herkimer, Oneida, and Lewis counties, was completed by C. E. Cooke, R. C. McKinney, J. I. Gayetty, S. P. Floore, J. H. Lee Feaver, J. F. McBeth, and H. L. Dodge, the total area mapped being 609 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. The mapping of the Lowville quadrangle, in Lewis County, was begun by J. M. Whitman, S. P. Floore, and J. H. Lee Feaver, the area mapped being 89 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of the New Berlin, McKeever, and Lowville quadrangles and of the No. 4 quadrangle, in Lewis and Herkimer counties, C. H. Semper, K. E. Schlachter, and James Rayburn ran 245 miles of primary levels and established 50 permanent bench marks, and D. H. Baldwin ran 84 miles of primary traverse and set 11 permanent marks. Revision of culture was completed on the Rochester quadrangle, in Monroe County, by C. E. Cooke, the area revised being 218 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet.

*North Carolina.*—(See Tennessee-North Carolina, pp. 97–98.)

*Pennsylvania.*—The Topographic and Geological Survey Commission of Pennsylvania allotted $5,183 for the continuation of the cooperative topographic survey of the State, and the United States Geological Survey allotted a like sum for the same purpose. The survey of the McCalls Ferry, Quarryville, and Hilliards quadrangles, in York, Lancaster, Chester, Venango, Butler, and Mercer counties was completed, and that of the Mercer and Stoneboro quadrangles, in Mercer and Crawford counties, was begun; the total area mapped being 754 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. This work was done by Duncan Hannegan, R. C. McKinney, J. H. Renshawe, R. A. Kiger, Robert Muldrow, J. M. Whitman, and W. N. Vance. For the control of these areas and of the Lancaster and New Holland quadrangles, in Lancaster County, C. H. Semper, James Rayburn, and Howard Mellinger ran 38 miles of primary levels and established 11 permanent bench marks. For the control of the Winter, Somerset, Ligonier, Windber, and Stahlstown quadrangles, in Somerset and Westmoreland counties, George T. Hawkins and J. B. Metcalfe occupied and marked 13 triangulation stations. The survey of the Pennsylvania portions of the Hagerstown and Williamsport quadrangles (the greater part of which lies in and is reported under Maryland), in Franklin County, was also completed, the area mapped being 40 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet, in connection with which 3 miles of primary levels were run and one permanent bench mark was set.

*Tennessee.*—The North Fork of the Forked Deer River drainage commission and the Rutherford Fork of Obion River drainage commission allotted, through the State geologist, the sums of $1,000 and $1,250, respectively, for cooperative topographic surveys of those rivers and the United States Geological Survey made like allotments for the same purpose. Areas of 37 square miles in Gibson County, on North Fork of Deer River, and of 43 square miles on Rutherford Fork of Obion River were surveyed by W. H. Griffin, Charles Hartmann, jr., S. P. Floore, J. M. Rawls, and J. De Puy for publication on the scale of 1:31,680, with a contour interval of 5 feet. The State geologist allotted $2,000 and the Federal Survey a like sum for the completion of primary control in the Trenton, Alamo, Greenfield, Obion, Martin, and Union City quadrangles, in Gibson, Madison, Crockett, Weakley, Obion, and Dyer counties. For this control E. L. McNair and J. M. Rawls ran 79 miles of primary levels, established 16 permanent bench marks, ran 415 miles of primary traverse, and set 46 permanent marks. In addition to the cooperative work in Tennessee, the survey of the Crossville quadrangle, in Cumberland, Bledsoe, White, and Van Buren counties, was completed and that of the Hollow Springs quadrangle, in Cannon, Coffee, Bedford, and Rutherford counties, was begun, the area mapped being 368 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. This work was done by Oscar Jones, J. F. McBeth, T. F. Slaughter, J. G. Stelzenmuller, F. W. Farnsworth, and E. E. Witherspoon. For the control of the Hollow Springs and Crossville quadrangles, Messrs. Witherspoon and Farnsworth and S. E. Taylor and F. W. Crisp ran 250 miles of primary levels and established 41 permanent bench marks, and Oscar Jones ran 63 miles of primary traverse and established 4 permanent marks. Under the terms of the Weeks Act a special resurvey was made of an area covering 101 square miles in the Great Smoky Mountain National Forest, Blount and Sevier counties, for publication on the scale of 1:62,500, with a contour interval of 100 feet. This work was done by Oscar Jones, W. H. S. Morey, Charles Hartmann, jr., R. A. Kiger, S. E. Taylor, J. M. Rawls, A. F. McNair, C. W. Arnold, and C. S. Wells, the expenses being paid from the appropriation made in the act above named.

*Tennessee-North Carolina.*—J. I. Gayetty completed the revision of the Mount Guyot quadrangle, in Cooke, Lewis, and Jefferson counties, Tenn., and Haywood, Swain, and Jackson counties, N. C., the area resurveyed being 35 square miles in Tennessee and 5 square miles in North Carolina, for publication on the scale of 1:125,000, with a contour interval of 100 feet.

*Virginia.*—For cooperative topographic surveys in Virginia the State geologist and the United States Geological Survey each allotted $1,750. For the control of the Gold Belt region (Palmyra, Gordonsville, and Spottsylvania quadrangles), in Louisa, Fluvanna, Goochland, Orange, Spottsylvania, and Albemarle counties, D. H. Baldwin ran 129 miles of primary traverse and set 13 permanent marks.

*Vermont.*—The survey of the Woodstock quadrangle, in Windsor County, was begun by R. D. Cummin, T. F. Slaughter, W. H. S. Morey, and Homer Dodge, the area mapped being 139 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of this area A. F. McNair ran 55 miles of primary levels and set 11 permanent bench marks.

*West Virginia.*—For the continuation of cooperative topographic surveys in West Virginia the State geologist allotted $12,000 and the United States Geological Survey allotted $10,000. The resurvey of areas previously mapped resulted in the completion of the work on the Welch, Pineville, Mullen, Holden, and Bald Knob quadrangles and the West Virginia portions of the Iaeger, Naugatuck, and Maxwell quadrangles, and of part of the work on the Logan, Louisa, and Marshes quadrangles, in McDowell, Wyoming, Logan, Raleigh, Mingo, Wayne, Boone, Lincoln, Fayette, and Welch counties, the total area mapped being 1,391 square miles, for publication on the scale of 1:62,500, with a contour interval of 50 feet. This work was done by E. I. Ireland, Fred McLaughlin, S. E. Taylor, C. P. McKinley, C. S. Wells, A. J. Dailey, C. W. Arnold, J. H. Wilson, S. R. Truesdell, and F. E. Hale. For the control of these areas S. E. Taylor, J. B. Metcalfe, Fred McLaughlin, C. P. McKinley, and F. E. Hale ran 320 miles of primary levels and established 73 permanent bench marks. For the control of the Alton and Crawford quadrangles, in Upshur, Barbour, and Randolph Counties, D. H. Baldwin and J. I. Gayetty occupied and marked 9 triangulation stations for the control of the Red Star, Hinton, Flat Top, and Meadow Creek quadrangles, in Fayette, Summers, Mercer, Raleigh, and Wyoming counties, and C. B. Kendall and C. P. McKinley occupied 6 triangulation stations and marked 2. The survey of the West Virginia portion of the Williamsport quadrangle (the greater part of which lies in and is reported under Maryland), in Berkeley County, was also completed, the area mapped being 50 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet, in connection with which 7 miles of primary levels were run and 3 permanent bench marks were set.

### OFFICE WORK.

The drafting of the following sheets was completed: Fayette special, Ala.; Livermore and Kezar Falls, Me.; Hagerstown, Md.-Pa.; Williamsport, Md.-Pa.-W. Va.; New Berlin, Hartwick, McKeever, Hammond, and Canton, N. Y.; Hilliards, Quarryville, and McCalls Ferry, Pa.; Crossville, Mount Guyot revision, Rutherford Fork of Obion River, and North Fork of Forked Deer River, Tenn.; Mullen, Pineville, Welch, Bald Knob, Holden, W. Va., and West Virginia portions of Iaeger and Naugatuck.

Progress in the drafting of additional sheets was made as follows: Seale, Ala., 60 per cent; Buckfield, Me., 52 per cent.

In the triangulation and computing section the following work was completed:

Latitudes, departures, and geographic positions for the Stockley (Del.) and Seaford (Del.-Md.) quadrangles were computed.

Primary level circuits were adjusted and latitudes, departures, and geographic positions were computed for the Hawthorn, Interlachen, Palatka, and Starke quadrangles (Fla.). Latitudes, departures, and geographic positions for the Greencove Springs, Hague, and Welaka quadrangles (Fla.) were computed.

Primary level circuits were adjusted and latitudes, departures, and geographic positions were computed for the Greensboro, Shoulder, and Sparta quadrangles (Ga.).

Primary level circuits were adjusted and geodetic distances and positions were computed for the Buckfield and Livermore quadrangles (Me.). Geodetic distances and positions in the Bryants Pond and Sango Pond quadrangles (Me.) were computed.

Primary and precise level circuits were adjusted and latitudes, departures, and geographic positions were computed for the Great Falls power project special survey (Md.-Va.).

Primary level circuits in the Hagerstown (Md.-Pa.) and Williamsport (Md.-W. Va.-Pa.) quadrangles were adjusted.

Primary level circuits in the Iuka quadrangle (Miss.-Tenn.-Ala.) were adjusted.

Primary level circuits were adjusted and latitudes, departures, and geographic positions were computed for the Lowville and No. 4 quadrangles (N. Y.). Primary level circuits in the McKeever, New Berlin, and Port Leyden quadrangles (N. Y.) were adjusted. The geodetic position of the seismograph site in the American Museum of Natural History grounds in New York City was computed.

Primary level circuits in the Hilliards, McCalls Ferry, and Quarryville quadrangles (Pa.) were adjusted.

Primary level circuits were adjusted and latitudes, departures, and geographic positions were computed for the Alamo, Crossville, Greenfield, and Trenton quadrangles (Tenn.). Latitudes, departures, and geographic positions for the Dresden, Martin, Trenton, Trimble, and Union City (Tenn.) and Tiptonville (Tenn.-Mo.) quadrangles were computed.

Primary level notes for the Woodstock quadrangle (Vt.) were checked.

Latitudes, departures, and geographic positions for the Gordonsville, Palmyra, and Spottsylvania quadrangles (Va.) were computed.

Primary level circuits in the Holden, Mullen, and Pineville (W. Va.) and Iaeger and Welch (W. Va.-Va.) quadrangles were adjusted.

Level lists were revised and assembled, after all necessary computations and readjustments had been made, and transmitted to the editor for publication as bulletins for West Virginia (Bulletin 477) and New York.

## CENTRAL DIVISION.

### FIELD WORK.

#### SUMMARY.

During the season topographic mapping was carried on in Arkansas, Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Missouri, and Ohio. This work comprised the survey of 16 quadrangles and 1 special area and the revision of 1 special area. In addition, 20 quadrangles and 2 river projects were partly surveyed. The total new area mapped was 5,131 square miles—259 for publication on the scale of 1:125,000, 4,730 for publication on the scale of 1:62,500, and 142 for publication on the scale of 1:24,000. The area resurveyed was 57 square miles, for publication on the scale of 1:62,500. In connection with this work 2,074 miles of primary levels were run and 519 permanent bench marks were established.

Primary traverse and primary triangulation were carried on at different times by four parties, the work being distributed over portions of Illinois, Iowa, Kentucky, Michigan, Minnesota, Missouri, and Ohio. The total area covered by this primary control was about 5,300 square miles, of which 4,840 were controlled by primary traverse, 2,088 miles being run and 218 permanent marks set. Six triangulation stations were occupied and 4 were marked. The result of this work was to make control available in 59 quadrangles.

*Topographic surveys in central division from July 1, 1910, to June 30, 1911.*

| State. | Contour interval. | For publication on scale of— | | | Total area surveyed. | Primary levels. | | Primary traverse. | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1:125,000. | 1:62,500. | | | Distance run. | Bench marks. | Distance. run. | Permanent marks. |
| | | New. | New. | Resurvey. | | | | | |
| | *Feet.* | *Sq. mi.* | *Sq. mi.* | *Sq. mi.* | *Sq. mi.* | *Miles.* | | *Miles.* | |
| Arkansas | 20-50 | 245 | ........ | 57 | 302 | ........ | ........ | ........ | ........ |
| Oklahoma | 50 | 14 | ........ | ........ | 14 | ........ | ........ | ........ | ........ |
| Illinois | 5-20 | ........ | 869 | ........ | [a]1,011 | 293 | 47 | 291 | 37 |
| Indiana | 20 | ........ | 100 | ........ | 100 | 27 | 9 | ........ | ........ |
| Iowa | 20 | ........ | 328 | ........ | 328 | 108 | 34 | 50 | 3 |
| Kentucky | 20 | ........ | 666 | ........ | 666 | 262 | 98 | 10 | 3 |
| Michigan | 20 | ........ | 193 | ........ | 193 | ........ | ........ | 466 | 58 |
| Minnesota | 10 | ........ | 719 | ........ | 719 | 374 | 101 | 233 | 28 |
| Missouri | 10 | ........ | 351 | ........ | 351 | 80 | 19 | 174 | 15 |
| Ohio | 10-20 | ........ | 1,504 | ........ | 1,504 | 930 | 211 | 864 | 74 |
| | ........ | 259 | 4,730 | 57 | 5,188 | 2,074 | 519 | 2,088 | 218 |

[a] 142 square miles in Illinois, for publication on the scale of 1: 24,000.

### DETAILS OF WORK BY STATES.

*Arkansas.*—The survey of the De Queen quadrangle, in Polk, Howard, and Sevier counties, Ark., and McCurtain County, Okla., was continued by H. H. Hodgeson and W. R. Schreiner, the area mapped being 259 square miles, for publication on the scale of 1:125,000, with a contour interval of 50 feet. Of this area, 14 miles lies in Oklahoma. A portion of the Hot Springs special quadrangle, in Garland and Hot Springs counties, was revised by C. L. Sadler and F. B. Barrett, the area revised being 57 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet.

*Illinois.*—The governor of Illinois allotted $10,000 for the continuation of cooperative topographic surveys in Illinois, and the United States Geological Survey an equal amount for the same purpose. The governor also made an additional allotment of $3,750 for a survey of the overflowed lands within the State, which was met by an allotment of $1,250 by the Federal Survey. The survey of the Milan quadrangle, comprising 224 square miles in Rock Island and Mercer counties, Ill., and Scott County, Iowa, was completed. Of this area, 25 square miles lie in Iowa, and the cost of mapping that portion was paid from Federal funds. The survey of the Waterloo quadrangle, comprising 234 square miles in St. Clair and Monroe counties; of the Canton quadrangle, comprising 227 square miles in Fulton and Knox counties; and of the Illinois portion of the Kimmswick quadrangle, comprising 84 square miles in St. Clair and Monroe counties, was completed for publication on the scale of 1:62,500, with a contour interval of 20 feet. This work was done by Frank Tweedy, F. W. Hughes, E. L. Hain, B. A. Jenkins, O. H. Nelson, and W. S. S.

Johnson. The survey of the Colchester quadrangle, in McDonough County, was begun by Mr. Tweedy, the area mapped being 100 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. The survey of the Illinois portion of the Renault quadrangle, in Monroe and Randolph counties, was begun by F. W. Hughes, the area mapped being 25 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of the Milan quadrangle, C. B. Kendall ran 89 miles of primary traverse and set 16 permanent marks. For the control of the Renault quadrangle, C. R. French ran 20 miles of primary levels and set 5 permanent bench marks. For the control of the Waterloo quadrangle, S. R. Archer ran 67 miles of primary levels and established 17 permanent bench marks. For the control of the Kimmswick quadrangle, Mr. Archer ran 27 miles of primary levels and established 8 permanent bench marks. For the control of the Carthage, Colchester, Lomax, Keokuk, Macomb, and Vermont quadrangles, in Hancock, Schuyler, Fulton, and McDonough counties, C. B. Kendall ran 159 miles of primary traverse and set 17 permanent marks. For the control of the Marseille, Ottawa, and Earlville quadrangles, in Lasalle County, J. R. Ellis ran 43 miles of primary traverse and set 4 permanent marks. Under the allotment for surveying overflowed lands, C. C. Gardner and B. A. Jenkins continued the survey of the Spoon River project, in Fulton County, the area mapped being 11 square miles, for publication on the scale of 1:24,000, with a contour interval of 5 feet. For the control of this area S. R. Archer ran 11 miles of primary levels and set 3 permanent bench marks. The survey of the Embarrass River project, in Lawrence County, was continued by L. L. Lee, H. W. Peabody, and J. B. Leavitt, the area mapped being 131 square miles, for publication on the scale of 1:24,000, with a contour interval of 5 feet. For the control of this area Messrs. Peabody and Leavitt and R. G. Clinite ran 107 miles of primary levels and established 14 permanent bench marks. For the control of the Big Muddy River project, in Union, Jackson, Williamson, and Franklin counties, S. R. Archer ran 61 miles of primary levels.

*Indiana.*—The survey of the Indiana portion of the Kosmosdale quadrangle, in Floyd, Harrison, and Jefferson counties, was completed by Fred Graff, jr., the area mapped being 100 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of this area E. C. Bibbee ran 27 miles of primary levels and set 9 permanent bench marks.

*Iowa.*—The State geologist of Iowa allotted $1,750 for the continuation of the cooperative topographic surveys in that State and the Federal Survey allotted an equal amount for the same purpose. The survey of the Pella quadrangle, in Marion and Mahaska counties, was completed by H. W. Peabody, the area mapped being 120 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. The survey of the Slater quadrangle, in Polk and Story counties, was begun by B. A. Jenkins, L. B. Roberts, and W. L. Miller, the area mapped being 156 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of the Slater quadrangle and of the Madrid quadrangle, in Boone, Polk, and Story counties, C. B. Kendall ran 50 miles of primary traverse and set 3 permanent marks, and C. H. Semper and Howard Clark ran 108 miles of primary levels and established 34 permanent bench marks. In addition to the cooperative work in Iowa the survey of the Iowa portion of the Galena quadrangle, in Jackson and Dubuque counties, was completed by B. A. Jenkins, the area mapped being 27 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. (See also p. 101 for the mapping of the Iowa portion of the Milan quadrangle.)

*Kentucky.*—The Kentucky Geological Survey allotted $10,000 for the continuation of cooperative topographic surveys in Kentucky and the Federal Survey allotted an equal amount for the same purpose. The survey of the Nortonville quadrangle, comprising 238 square miles in Hopkins, Christian, and Muhlenberg counties, and of the unmapped portion of the Monticello quadrangle, comprising 108 square miles in Wayne, Pulaski, and Russell counties, was completed. This work was done by C. W. Goodlove, N. E. Ballmer, W. A. Reiter, C. L. Sadler, Fred Graff, jr., and F. B. Barrett. The survey of the Drakesboro quadrangle (formerly called Greenville), in Muhlenberg, Logan, and Todd counties, was begun by C. W. Goodlove, N. E. Ballmer, and W. A. Reiter, the area mapped being 202 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. The survey of the La Grange and Taylorsville quadrangles, in Jefferson County, was begun by Fred Graff, jr., the area mapped being 88 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. The survey of the Crockettsville quadrangle, in Perry, Breathitt, and Knott counties, was begun by J. R. Eakin, the area mapped being 30 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of the Nortonville quadrangle C. B. Shaw and Ed. Shea ran 83 miles of primary levels and established 29 permanent bench marks. For the control of the Monticello quadrangle F. B. Barrett ran 32 miles of primary levels and established 9 permanent bench marks. For the control of the Taylorsville quadrangle E. C. Bibbee ran 10 miles of primary levels and established 9 permanent bench marks. For the control of the Drakesboro quadrangle E. C. Bibbee ran 81 miles of primary levels and established 25 permanent bench marks. For the control of the Crockettsville quadrangle and of the Troublesome quadrangle, in Perry, Breathitt, and Knott counties, J. R. Eakin and George T. Hawkins occupied 6 triangulation stations and marked 5, and S. R. Archer ran 42 miles of primary levels and set 7 permanent bench marks. For the control of the Hickman quadrangle, in Fulton County, E. L. McNair ran 10 miles of primary traverse and set 3 permanent marks.

*Michigan.*—For the continuation of cooperative topographic surveys in Michigan the State geologist allotted $2,000, which was met with a like sum by the United States Geological Survey. The survey of the Lansing quadrangle, in Ingham and Eaton counties, was completed by L. L. Lee, the area mapped being 166 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. The survey of the Grand Rapids quadrangle, in Kent County, was begun by A. M. Walker, the area mapped being 27 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. For the control of the Marcellus, Schoolcraft, Gobleville, Allegan, Kalamazoo, Wayland, Jenison, Cedar Springs, Jones, Centerville, Lowell, Blissfield, Adrian, Grand Rapids, Hastings, Ionia, Vermontville, Charlotte, Muir, Reading, Hillsdale, and Hudson quadrangles, in Kalamazoo, St. Joseph, Allegan, Kent, Lowell, Lenawee, Barry, Eaton, and Hillsdale counties, J. R. Ellis and J. H. Wilson ran 296 miles of primary traverse and set 35 permanent marks. In addition to the cooperative work in Michigan, the control of the Houghton, Beacon Hill, Kenton, Winona, Watersmeet, Sidnaw, Rubicon, Perch Lake, Greenland, and Paynesville quadrangles, in Houghton, Iron, Ontonogan, Gogebic, and Baraga counties, was begun by E. L. McNair, 170 miles of primary traverse being run and 23 permanent marks being set.

*Minnesota.*—The State drainage engineer of Minnesota allotted $8,000 for the continuation of cooperative topographic work in that State and the United States Geological Survey made an equal allotment. The survey of the uncompleted portion of the Morris quadrangle, comprising 131 square miles in Stevens County, of the Wendell quadrangle, comprising 207 square miles in Grant and Ottertail counties, and of the Chokio quadrangle, comprising 210 square miles in Stevens, Bigstone, and Traverse counties, was completed. The survey of the Ashby quadrangle, in Grant, Ottertail, and Douglas counties, was begun, the area mapped being 120 square miles; the survey of the Fergus Falls quadrangle, in Ottertail County, was begun, the area mapped being 37 square miles; and the survey of the Underwood quadrangle, in Ottertail County, was begun, the area mapped being 14 square miles. All surveys in Minnesota were made for publication on the scale of 1:62,500, with a contour interval of

10 feet. This work was done by C. L. Sadler, O. H. Nelson, W. S. S. Johnson, E. L. Hain, and F. B. Barrett. For the control of the Wendell quadrangle J. M. Ray ran 17 miles of primary levels and established 2 permanent bench marks. For the control of the Chokio quadrangle E. C. Bibbee ran 45 miles of primary levels and established 13 permanent bench marks. For the control of the Ashby quadrangle J. M. Ray ran 78 miles of primary levels and established 19 permanent bench marks. For the control of the Fergus Falls, Underwood, and Battle Lake quadrangles, in Ottertail County, J. M. Ray and E. C. Bibbee ran 234 miles of primary levels and established 67 permanent bench marks, and C. B. Kendall ran 233 miles of primary traverse and set 28 permanent marks.

*Missouri.*—For the continuation of cooperative topographic surveys in Missouri the State geologist allotted $4,000 and the United States Geological Survey allotted an equal amount. The survey of the Aurora special area, embracing 331 square miles, in Barry, Jasper, Lawrence, and Newton counties, was completed by H. H. Hodgeson, W. H. Phelps, and W. R. Schreiner, for publication on the scale of 1:62,500, with a contour interval of 10 feet. The survey of the Queen City quadrangle, in Putnam, Adair, and Schuyler counties, was begun by W. J. Lloyd and P. W. McMillen, the area mapped being 20 square miles, for publication on the scale of 1:62,500, with a contour interval of 10 feet. For the control of the Queen City quadrangle and of the Green City quadrangle, in the same counties, P. W. McMillen ran 80 miles of primary levels and established 19 permanent bench marks, and C. B. Kendall ran 174 miles of primary traverse and set 15 permanent marks.

*Ohio.*—The governor of Ohio allotted $25,000 and the United States Geological Survey allotted $15,000 for the continuation of cooperative topographic surveys in Ohio. The survey of the unmapped portion of the Carrollton quadrangle, covering 164 square miles in Carroll, Stark, and Columbiana counties, and of the Laurelville quadrangle, covering 150 square miles in Pickaway, Ross, Vinton, and Hocking counties, was completed. The survey of the Oak Hill quadrangle, comprising 282 square miles in Jackson, Gallia, Lawrence, and Scioto counties, and of the Scioto quadrangle, comprising 232 square miles in Scioto, Jackson, and Pike counties, was completed. The survey of the Jackson quadrangle, in Jackson, Vinton, and Ross counties, was begun, the area mapped being 145 square miles; that of the Navarre quadrangle, in Tuscarawas, Stark, Holmes, and Wayne counties, was begun, the area mapped being 49 square miles; that of the Sidney quadrangle, in Shelby, Logan, and Champaign counties, was begun, the area mapped being 60 square miles; that of the New Comerstown quadrangle, in Tuscarawas, Coshocton, and Holmes counties, was begun, the area mapped being

74 square miles; that of the Celina quadrangle, in Mercer and Van Wert counties, was begun, the area mapped being 176 square miles; that of the Circleville and Era quadrangles, in Pickaway, Fairfield, Ross, and Fayette counties, was begun, the area mapped being 170 square miles; and that of the Van Wert quadrangle, in Van Wert and Paulding counties, was begun, the area mapped being 52 square miles. The total area mapped in Ohio was 1,504 square miles, for publication on the scale of 1:62,500, with contour intervals of 10 and 20 feet. This work was done by J. H. Jennings, M. Hackett, L. D. Townsend, W. S. S. Johnson, J. A. Duck, E. L. Hain, W. N. Vance, Fred Graff, jr., O. H. Nelson, A. P. Meade, W. H. Griffin, W. H. Rayner, and F. W. Hughes. For the control of the Oak Hill quadrangle C. E. Mills ran 31 miles of primary levels and established 8 permanent bench marks. For the control of the Scioto quadrangle Mr. Mills ran 19 miles of primary levels and established 6 permanent bench marks. For the control of the Van Wert and Paulding quadrangles Mr. Mills, A. D. Duck, and Howard Clark ran 107 miles of primary levels and set 31 permanent bench marks. For the control of the Celina quadrangle Mr. Clark ran 73 miles of primary levels and established 18 permanent bench marks. For the control of the Circleville and Era quadrangles James Rayburn and A. D. Duck ran 93 miles of primary levels and established 23 permanent bench marks. For the control of the Navarre quadrangle E. C. Bibbee and C. W. Howell ran 25 miles of primary levels and established 6 permanent bench marks. For the control of the Otway quadrangle, in Scioto and Pike counties, C. B. Shaw, C. E. Mills, and Howard Clark ran 119 miles of primary levels and established 26 permanent bench marks; for the control of the Vanceburg quadrangle, in Adams and Lewis counties, 34 miles of primary levels and 4 permanent bench marks; for the control of the Portsmouth quadrangle, in Scioto County, 13 miles of primary levels and 2 permanent bench marks; for the control of the Peebles quadrangle, in Adams County, 120 miles of primary levels and 24 permanent bench marks; for the control of the Marysville and Manchester quadrangles, in Brown and Adams counties, 19 miles of primary levels and 5 permanent bench marks; for the control of the Berne quadrangle, in Mercer and Van Wert counties, 22 miles of primary levels and 6 permanent bench marks; for the control of the West Union quadrangle, in Brown and Adams counties, 90 miles of primary levels and 14 permanent bench marks; for the control of the Bobo quadrangle, in Van Wert County, 20 miles of primary levels and 6 permanent bench marks. For the control of the Brinkhaven and Plimpton quadrangles, in Coshocton, Holmes, Knox, Wayne, and Ashland counties, E. C. Bibbee ran 47 miles of primary levels and established 10 permanent bench marks; for the control of the Millers-

burg quadrangle, in Holmes and Wayne counties, Mr. Bibbee ran 46 miles of primary levels and established 11 permanent bench marks, and for the control of the Sidney quadrangle 52 miles of primary levels and 11 permanent bench marks. For the control of the Bethel, Georgetown, Maysville, West Union, Lawrenceburg, Harrison, Bucyrus, Fort Recovery, Lexington, Liberty, Norwalk, Paulding, Plymouth, Richmond, Siam, Union City, Brinkhaven, Cardington, Fredericktown, Marysville, Mount Gilead, Mount Vernon, Perrysville, Plimpton, Urbana, Larue, Mechanicsburg, Kenton, East Liberty, Bellefontaine, Halls Corners, and Alger quadrangles, in Clermont, Brown, Adams, Hamilton, Butler, Crawford, Darke, Mercer, Morrow, Knox, Richland, Preble, Huron, Paulding, Seneca, Coshocton, Morris, Delaware, Marion, Union, Madison, Champaign, Hardin, and Clark counties, J. R. Ellis ran 864 miles of primary traverse and established 74 permanent marks.

### OFFICE WORK.

The drafting of the following sheets was completed: Hot Springs, Ark., revision; Waterloo, Canton, Milan, and Galena, Ill.; Pella, Iowa; Kosmosdale, Ind.-Ky.; Nortonville and Prospect, Ky.; Lansing, Mich.; Chokio, Morris, and Wendell, Minn.; Aurora special, Mo.; Laurelville, Carrollton, Oak Hill, and Canal Dover, Ohio.

Progress in the drafting of additional sheets was made as follows: De Queen, Ark., 40 per cent; La Grange, Ky., 8 per cent; Taylorsville, Ky., 33 per cent; Jackson, Ohio, 41 per cent; Scioto, Ohio, 18 per cent; Kimmswick, Ill., 32 per cent; Embarrass River project, Ill., 47 per cent; Spoon River project, Ill., 80 per cent; Ashby, Minn., 12 per cent.

In the triangulation and computing section the following work was completed:

Primary level circuits were adjusted and latitudes, departures, and geographic positions were computed for the Carthage, Colchester, La Harpe, and Lomax quadrangles (Ill.). Primary level circuits in the Birds, Hardinville, Newton, and Waterloo (Ill.), Kimmswick (Ill.-Mo.), and Vincennes (Ill.-Ind.) quadrangles were adjusted and latitudes, departures, and geographic positions for the Augusta, Avon, Canton, Galesburg, Glasford, Good Hope, Havana, Macomb, Manilo, Maquon, and Vermont (Ill.), Milan, and Madison (Ill.-Iowa), and Keokuk (Ill.-Mo.-Iowa) quadrangles were computed. Primary level notes were checked and latitudes, departures, and geographic positions were computed for the Madrid and Slater quadrangles (Iowa). Primary level circuits in the Dawson Springs, Nortonville, and Taylorsville quadrangles (Ky.) were adjusted;

latitudes, departures, and geographic positions for the Water Valley (Ky.) and Hickman (Ky.-Tenn.-Mo.) quadrangles were computed; and geodetic distances and positions for the Crockettsville and Troublesome quadrangles (Ky.) were computed. Latitudes, departures, and geographic positions for the Gobleville, Marcellus, and Schoolcraft (Mich.) and Centerville and Jones (Mich.-Ill.) quadrangles were computed. Primary level circuits were adjusted and latitudes, departures, and geographic positions were computed for the Ashby and Wendell quadrangles (Minn.). Primary level circuits in the Chokio quadrangle (Minn.) were adjusted and latitudes, departures, and geographic positions for the Axel, Battle Lake, Dora, Fergus Falls, Henning, New York Mills, Pelican Rapids, Perham, Rothsay, and Underwood quadrangles (Minn.) were computed. Latitudes, departures, and geographic positions for the Boynton, Edina, Green City, Kirksville, Queen City, and Winigan (Mo.) and Centerville and Moulton (Mo.-Iowa) quadrangles were computed. Primary level circuits were adjusted and latitudes, departures, and geographic positions were computed for the Brinkhaven, Otway, Peebles, Plimpton, and West Union (Ohio) and Georgetown, Maysville, Portsmouth, Rectorville, and Vanceburg (Ohio-Ky.) quadrangles. Primary level circuits in the Bainbridge, Canal Dover, Hillsboro, Jackson, Laurelville, Millersburg, Navarre, New Comerstown, Scioto, and Wooster (Ohio) and Greenup (Ohio-Ky.) quadrangles were adjusted and latitudes, departures, and geographic positions for the Batavia, Bucyrus, Cardington, Celina, Defiance, Fredericktown, Hamilton, Mark Center, Mason, Mount Gilead, Mount Vernon, Paulding, Perrysville, Shauck, and Van Wert (Ohio), Bobo, Halls Corners, Harrison, Liberty, Lynn, Portland, Richmond (Ohio-Ind.), Bethel (Ohio-Ky.), and Lawrenceburg (Ohio-Ind.-Ky.) quadrangles were computed.

Level lists were revised and assembled after all necessary computations and readjustments had been made and transmitted to the editor for publication as bulletins for the following States or groups of States: Illinois (Bulletin 493), Iowa (Bulletin 460), Minnesota (Bulletin 453), Missouri (Bulletin 459), Ohio (Bulletin 476), Michigan and Wisconsin (Bulletin 461), and Arkansas, Louisiana, and Mississippi (Bulletin 458).

## ROCKY MOUNTAIN DIVISION.

### FIELD WORK.

#### SUMMARY.

During the season topographic mapping was carried on in Colorado, Montana, New Mexico, Oklahoma, South Dakota, and Wyoming. This work comprised the survey of 5 quadrangles and

3 special areas, and the revision of 5 quadrangles and 1 national park. In addition, 9 quadrangles, 1 special area, and 1 national park were partly surveyed and 1 quadrangle was partly revised. The total new area mapped was 4,661 square miles—1,095 for publication on the scale of 1:250,000, 2,865 for publication on the scale of 1:125,000, 377 for publication on the scale of 1:62,500, 180 for publication on the scale of 1:31,680, 134 for publication on the scale of 1:24,000, and 10 for publication on the scale of 1:12,000. The area resurveyed was 3,335 square miles—229 for publication on the scale of 1:62,500 and 3,106 for publication on the scale of 1:125,000. In connection with this work 607 miles of primary levels were run and 156 permanent bench marks were established. A profile survey of 1 river was also made, the distance traversed being 213 miles.

Primary triangulation was carried on at different times by two parties, the work being distributed over portions of Colorado and Wyoming. The total area covered by this primary control was about 6,300 square miles, and 24 triangulation stations were occupied and 27 marked. The result of this work was to make control available in 8 quadrangles and 1 national park.

*Topographic surveys in Rocky Mountain division, July 1, 1910, to June 30, 1911.*

| State. | Contour interval. | For publication on scale of— | | | | | | Total area mapped. | Primary levels. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1:250,000. | 1:125,000. | | 1:62,500. | | 1:31,680. | | Distance run. | Bench marks. |
| | | New. | New. | Resurvey. | New. | Resurvey. | New. | | | |
| | *Feet.* | *Sq. mi.* | *Sq. mi.* | *Sq. mi.* | *Sq. mi.* | *Sq. mi.* | *Sq. mi.* | *Sq. mi.* | *Miles.* | |
| Colorado | 25, 50, 100 | ........ | 715 | 170 | ........ | 229 | 144 | [a] 1,392 | 303 | 92 |
| Montana | 5, 20, 100 | ........ | 837 | ........ | 167 | ........ | 36 | 1,040 | 97 | 30 |
| New Mexico | 25, 100, 200 | 1,095 | 522 | 30 | 45 | ........ | ........ | [b] 1,702 | 77 | 12 |
| Oklahoma | 50 | ........ | ........ | 2,906 | ........ | ........ | ........ | 2,906 | ........ | ........ |
| South Dakota | 50 | ........ | 638 | ........ | ........ | ........ | ........ | 638 | 60 | 14 |
| Wyoming | 25, 50 | ........ | 153 | ........ | 165 | ........ | ........ | 318 | 70 | 8 |
| | ........ | 1,095 | 2,865 | 3,106 | 377 | 229 | 180 | 7,996 | 607 | 156 |

[a] 134 square miles in Colorado for publication on scale of 1:24,000.
[b] 10 square miles in New Mexico for publication on scale of 1:12,000.

### DETAILS OF WORK BY STATES.

*Colorado.*—The survey of the Creede special area, covering the Creede mining district, in Mineral County, was completed by R. H. Reineck, the total area mapped being 26 square miles, for publication on the scale of 1:24,000, with a contour interval of 50 feet. The survey of the De Beque oil field, in Mesa and Garfield counties, was completed by A. P. Meade, jr., the area mapped being 140 square miles, for publication on the scale of 1:31,680, with a contour interval of 25 feet. The survey of the Mesa Verde National Park, in

La Plata and Montezuma counties, was begun by R. W. Berry, the area mapped being 108 square miles, for publication on the scale of 1:24,000, with a contour interval of 25 feet. The survey of the Hahns Peak quadrangle, in the Park Range National Park, Routt and Jackson counties, and of the Price quadrangle, in the San Juan National Forest, Archuleta County, was begun by Gilbert Young, J. F. McBeth, Lee Morrison, P. W. McMillen, and S. T. Penick, the total area mapped being 715 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. The revision of the Central City quadrangle, in Gilpin, Grand, and Clear Creek counties, was completed by Lee Morrison, the area revised being 229 square miles, for publication on the scale of 1:62,500, with a contour interval of 100 feet. The revision of the Castle Rock quadrangle, in Douglas, Elbert, and El Paso counties, was commenced by C. G. Anderson, the area mapped being 170 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet.

For the control of these areas and of the Meeker, Piceance, Pagoda, Lily, Elkhead, Hahns Peak, Lay, and Pinon Valley quadrangles, in Garfield, Rio Blanco, Routt, and Mesa counties, C. H. Semper, P. W. McMillen, M. R. McDanal, and F. H. Nelson ran 303 miles of primary levels, and established 92 permanent bench marks, and C. F. Urquhart occupied 17 triangulation stations and marked 18.

*Montana.*—The survey of the Cherry Ridge quadrangle (formerly called Avery), in Chouteau County, was completed by Basil Duke, C. A. Leonard, and C. Ecklund, the area mapped being 395 square miles, for publication on the scale of 1:125,000, with a 20-foot contour interval. The survey of the Poplar, Chelsea, and Brockton quadrangles, in Valley and Dawson counties, was commenced by W. L. Miller and J. H. Wilke, the total area mapped being 167 square miles, for publication on the scale of 1:62,500, with a contour interval of 20 feet. The survey of the Melrose special area, in Silver Bow and Beaverhead counties, was begun by R. H. Reineck, the area mapped being 36 square miles, for publication on the scale of 1:31,680, with a contour interval of 50 feet. The survey of the Nyack and Midvale quadrangles, lying partly in the Glacier National Park and the Blackfeet, Flathead, and Lewis and Clark national forests, Teton and Flathead counties, was begun by R. T. Evans, S. T. Penick, C. A. Ecklund, W. J. Foster, and F. L. Whaley, the area mapped being 442 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. A survey of Clark Fork, in Powell, Granite, and Missoula counties, was begun by R. C. Seitz, the distance traversed being 213 miles. For the control of the Cherry Ridge quadrangle C. A. Leonard ran 44 miles of primary levels and established 17 permanent bench marks. For the control of the Poplar, Chelsea, and Brockton quadrangles J. H. Wilke ran 53 miles of primary levels and established 13 permanent bench marks. (See also p. 112.)

*New Mexico.*—The survey of the Kelly special area, in Socorro County, was completed by R. H. Reineck, the area mapped being 10 square miles, for publication on the scale of 1:12,000, with a contour interval of 25 feet. The survey of the Cloudcroft 1-degree quadrangle, in the Alamo National Forest, Otero and Chaves counties, was completed by J. H. Wilke and C. A. Ecklund, the area mapped being 1,095 square miles, for publication on the scale of 1:250,000, with a contour interval of 200 feet. The survey of the Camp Vincent quadrangle, in the Datil National Forest, Grant and Socorro counties, was begun by A. B. Searle and S. T. Penick, the area mapped being 522 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. A small area within the Silver City quadrangle, comprising 30 square miles, was revised by A. B. Searle, for publication on the scale of 1:125,000, with a contour interval of 100 feet. The survey of the Raton quadrangle, in Colfax County, was commenced by E. P. Davis, the area mapped being 45 square miles, for publication on the scale of 1:62,500, with a contour interval of 50 feet. For the control of this quadrangle a primary level line was started at Thatcher, Colo., by C. P. Gross, who ran 77 miles of primary levels and established 12 permanent bench marks. For the control of the Camp Vincent and Fairview quadrangles R. B. Robertson occupied 1 triangulation station and marked 7.

*Oklahoma.*—The revision of culture in the Antlers, Nowata, and Claremore quadrangles, in Atoka, Bruan, Choctaw, Pushmataha, Nowata, Washington, Rogers, and Tulsa counties, was completed by Lee Morrison, C. C. Gardner, A. O. Burkland, F. B. Barrett, and C. J. Ballinger, the total area revised being 2,906 square miles, for publication on the scale of 1:125,000, with a contour interval of 50 feet.

*South Dakota.*—The survey of the unmapped portion of the Newell quadrangle (formerly called Empire, the southwest quarter of which is the Vale 15-minute quadrangle, surveyed in 1904) was completed by G. S. Smith and C. P. Gross, the area mapped being 638 square miles, for publication on the scale of 1:125,000, with a contour interval of 50 feet. For the control of this area H. L. Caldwell ran 60 miles of primary levels and established 14 permanent bench marks.

*Wyoming.*—The survey of the Wiley quadrangle, in Bighorn County, was begun by C. C. Gardner, the area mapped being 165 square miles, for publication on the scale of 1:62,500, with a contour interval of 25 feet. The survey of the Cheyenne quadrangle, in Laramie County, was begun by E. P. Davis and continued by Basil Duke and H. L. Caldwell, the area mapped being 153 square miles, for publication on the scale of 1:125,000, with a contour interval of

50 feet. For the control of the Wiley quadrangle C. W. Rowell ran 70 miles of primary levels, and established 8 permanent bench marks. For the control of the Cheyenne quadrangle G. T. Hawkins occupied 6 triangulation stations and marked 2.

In addition to the work mentioned above, culture was revised and brought up to date in the Gallatin, Canyon, Shoshone, and Lake quadrangles, comprising the Yellowstone National Park, Wyoming, Montana, and Idaho, under a special allotment by the Department of the Interior for the preparation of an administrative map of the Yellowstone National Park.

### OFFICE WORK.

The drafting of the following sheets was completed: De Beque oil field, Creede special, and Central City, Colo.; Chelsea, Cherry Ridge, Hay Creek, Smoke Creek, and Poplar, Mont.; Nowata, Okla.; Newell, S. Dak.; Kelly special and Mogollon, N. Mex.; Millican and Washington, Tex.

Progress in the drafting of additional sheets was made as follows: Price, Colo., 18 per cent; Hahns Peak, Colo., 45 per cent; Mesa Verde, Colo., 85 per cent; Midvale, Mont., 19 per cent; Nyack, Mont., 25 per cent; Camp Vincent, N. Mex., 40 per cent; and Wiley, Wyo., 50 per cent.

In the triangulation and computing section the following work was completed:

Primary level circuits were adjusted and geodetic distances and positions were computed for the Cortez, De Beque special, Elkhead, Hahns Peak, Hesperus, Meeker, Pagoda, and Rifle quadrangles (Colo.). Primary level circuits in the Durango, Grand Junction, Ignacio, La Plata, Lewis Creek, and Rabbits Ears Peak quadrangles (Colo.) were adjusted, and geodetic distances and positions for the Cameo, Hotchkiss, Lay, Lily, Montrose, Piceance, and Pinon Valley quadrangles (Colo.) were computed.

Primary level circuits in the Brockton, Cherry Ridge, Harlem, Poplar, Red Lodge, and Wolf Point quadrangles (Mont.) were adjusted. The single spur line running through the Willis quadrangle (Mont.) and the Polaris quadrangle (Mont.–Idaho) was checked. Primary level circuits run by the General Land Office in the Milk River, No. 2, Whiskey Butte, and Wolf Point quadrangles (Mont.) were adjusted.

Partial computations of geodetic distances and positions in the Mescalero and Tularosa quadrangles (N. Mex.) were made.

Primary level circuits run by the General Land Office in the Blue Butte, Elbowoods, and Ryder quadrangles (N. Dak.) were adjusted.

Primary level circuits in the Empire quadrangle (S. Dak.) were adjusted.

Primary level circuits in the Baggs, Rawlins, Savery Creek, and Wiley quadrangles (Wyo.) were adjusted and geodetic distances and positions for the Cheyenne quadrangle (Wyo.) were computed.

Level lists were revised and assembled, after all necessary computations and readjustments had been made, and transmitted to the editor for publication as bulletins for the following States or groups of States; Colorado (Bulletin 486), Montana (Bulletin 482), New Mexico (Bulletin 464), North Dakota (Bulletin 469), South Dakota (Bulletin 472), Texas (Bulletin 468), and Kansas and Nebraska (Bulletin 473).

## PACIFIC DIVISION.

### FIELD WORK.

### SUMMARY.

During the season topographic mapping was carried on in Arizona, California, Idaho, Nevada, Oregon, Utah, and Washington. This work comprised the survey of 12 quadrangles, the partial survey of 30 quadrangles, 1 special area, and 1 national park, the resurvey or revision of 8 quadrangles, 3 special areas, and 1 national monument, and the partial resurvey of 8 quadrangles. The total new area mapped was 10,154 square miles—3,610 for publication on the scale of 1:250,000, 5,447 for publication on the scale of 1:125,000, 952 for publication on the scale of 1:62,500, and 145 for publication on the scale of 1:31,680. The area resurveyed was 1,315 square miles, 600 for publication on the scale of 1:125,000, 268 for publication on the scale of 1:62,500, 430 for publication on the scale of 1:31,680, and 17 for publication on the scale of 1:12,000. In connection with this work 1,776 miles of primary levels were run and 358 permanent bench marks were established. In addition, profile surveys of 11 rivers were made, the distance traversed being 541 miles. Topographic surveys were also carried on in the Territory of Hawaii, the area mapped being one island, embracing portions of four 15-minute quadrangles, and the partial survey of one island, covering portions of three quadrangles, the area mapped being 224 square miles, for publication on the scale of 1:31,680, in connection with which 178 miles of primary levels were run and 60 permanent bench marks set.

Primary triangulation and primary traverse were carried on at different times by four parties, the work being distributed over portions of California, Idaho, Oregon, Utah, and Washington. The total area covered by this primary control was about 6,300 square miles, of which 3,000 were controlled by primary traverse, 486 miles being run and 61 permanent marks set; 38 triangulation stations were occupied and 44 were marked. The result of this work was to make control available in 24 quadrangles.

*Topographic surveys in Pacific division from July 1, 1910, to June 30, 1911.*

| State. | Contour interval. | For publication on the scale of— 1:230,000. New. | 1:125,000. New. | 1:62,500. New. | 1:62,500. Resurveyed. | 1:31,680. New. | 1:31,680. Resurveyed. | Total area mapped. | Primary levels. Distance run. | Primary levels. Bench marks. | Primary traverse. Distance run. | Primary traverse. Permanent marks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | *Feet.* | *Sq. m.* | *Sq. m.* | *Sq. m.* | *Sq. m.* | *Sq. m.* | *Sq. m.* | *Sq. m.* | *Miles.* |  | *Mi.* |  |
| Arizona | 25-100 |  | 958 |  | 268 |  |  | a 1,843 | 40 | 10 |  |  |
| California | 5-25-50 | 2,919 | 3,178 | 170 |  | 145 | 430 | 6,842 | 414 | 90 |  |  |
| Nevada | 100-200 | 200 |  |  |  |  |  | 200 |  |  |  |  |
| Idaho | 5-50 | 491 | 100 | 220 |  |  |  | 811 | 237 | 57 |  |  |
| Montana | 100-200 |  | 35 |  |  |  |  | 35 |  |  |  |  |
| Oregon | 5-7-100 |  | 244 | 147 |  |  |  | 391 | 258 | 73 | 219 | 39 |
| Utah | 50-100 |  | 415 | 65 |  |  |  | 480 | 535 | 60 |  |  |
| Wyoming | 100 |  | 27 |  |  |  |  | 27 |  |  |  |  |
| Washington | 5-25-100 |  | 490 | 350 |  |  |  | 840 | 292 | 68 | 267 | 22 |
|  |  | 3,610 | 5,447 | 952 | 268 | 145 | 430 | 11,469 | 1,776 | 358 | 486 | 61 |
| Hawaii |  |  |  |  |  |  |  | 224 | 178 | 60 |  |  |

[a] 600 square miles resurveyed in Arizona for publication on scale of 1:125,000, and 17 square miles for publication on scale of 1:12,000.

### DETAILS OF WORK BY STATES.

*Arizona.*—The survey of the Winkleman quadrangle, in Pinal and Gila counties, Ariz., was completed by J. E. Blackburn, Pearson Chapman, J. G. Staack, S. T. Penick, and T. P. Pendleton, the total area mapped being 958 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. The resurvey of the Miami and Ray special areas, in Gila and Pinal counties, was completed by W. M. Beaman, for publication on the scale of 1:12,000, with a contour interval of 25 feet, the total area mapped being 17 square miles. The resurvey of the Petrified Forest National Monument, in Navajo and Apache counties, was completed by Pearson Chapman and J. G. Staack, the total area mapped being 268 square miles, for publication on the scale of 1:62,500, with a contour interval of 25 feet. For the control of this area 40 miles of primary levels were run and 10 permanent bench marks established. The revision of a portion of the Flagstaff quadrangle, in the Coconino and Tusayan national forests, in Coconino County, was completed by W. M. Beaman, the total area revised being 600 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet.

*California.*—The department of engineering of California allotted $14,000 for the continuation of cooperative topographic surveys in that State and the United States Geological Survey allotted a like sum for the same purpose. In the Sacramento Valley the resurvey of the Marysville quadrangle and of the Sacramento Valley portions of the Smartsville and Chico quadrangles, in Yuba, Sutter, Colusa, Butte, Glenn, and Tehama counties, was completed, and resulted in the completion of the Nelson, Marysville Buttes, Pennington, Nord, Dayton, Durham, Newhard, and Dry Creek 7½-minute quadrangles, and of the valley portions of the Spenceville, Oroville, Singer Creek, Keefers, Clear Creek, and Bangor 7½-minute quadrangles, the total are resurveyed being 430 square miles, for publication on the scale of 1:31,680, with a contour interval of 5 feet.

In the Salinas Valley the mapping of the Gonzales and Soledad quadrangles, in Monterey and San Benito counties, was started, the total area mapped being 99 square miles, for publication on the scale of 1:31,680, with a contour interval of 5 feet. The mapping of the Stockton and Brentwood 7½-minute quadrangles, in the San Joaquin Valley, in San Joaquin and Contra Costa counties, was commenced, the area mapped being 57 square miles, for publication on the scale of 1:31,680, with a contour interval of 5 feet. The work in the Sacramento, Salinas, and San Joaquin valleys was done by Duncan Hannegan, W. H. Griffin, T. H. Moncure, J. W. Muller, M. A. Knock, Bayard Knock, J. L. Lewis, J. P. Harrison, A. T. Fowler, A. J. Ogle, W. R. Chenoweth, R. M. La Follette, and A. E. Bungay. For the control of the Byron, Stockton, and Tracy 15-minute quadrangles, in the San Joaquin Valley, in San Joaquin, Contra Costa, and Alameda counties, L. F. Biggs and G. L. Hagman ran 269 miles of primary levels and established 62 permanent bench marks, and occupied 10 and marked 9 triangulation stations.

In addition to the cooperative work in California, the survey of the Bakersfield quadrangle, in Kern County, was completed by J. L. Lewis and Bayard Knock, the total area mapped being 567 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. The survey of the Mariposa quadrangle, in Mariposa, Fresno, and Madera counties, was completed by E. R. Bartlett, T. P. Pendleton, and J. W. Muller, the total area mapped being 345 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. The survey of the Coalinga and Panoche quadrangles, in Kings, Monterey, Fresno, San Benito, and Merced counties, was completed by H. L. McDonald and J. L. Lewis, the total area mapped being 879 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. The survey of the Petaluma quadrangle, in Sonoma and Marin counties, was commenced by J. G. Staack and M. A. Knock, the total area mapped being 170 square miles, for publication on the scale of 1:62,500, with a contour interval of 25 feet. A small area, covering about half a square mile in the Randsburg quadrangle, in San Bernardino and Kern counties, was revised by T. P. Pendleton. The survey of the Weaverville, Big Bar, and Korbel quadrangles, in the Trinity National Forest, in Trinity and Humboldt counties, was continued by

J. P. Harrison and Oscar Jones, the total area mapped being 259 square miles, for publication on the scale of 1:250,000, with a contour interval of 200 feet, and 54 square miles for publication on the scale of 1:125,000, with a contour interval of 100 feet. The survey of the Bishop quadrangle, in the Inyo National Forest, in Inyo County, was continued by G. R. Davis and B. A. Jenkins, the total area mapped being 720 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. The survey of the Caliente quadrangle, in the Sequoia National Forest, was continued by C. F. Eberly, R. M. La Follette, and J. W. Muller, the total area mapped being 613 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. For the additional control of the Caliente quadrangle 145 miles of primary levels were run and 28 permanent bench marks were set by K. W. Trimble and G. L. Hagman.

*California-Nevada.*—The survey of the western half of the Ballarat 1-degree quadrangle, in Inyo County, Cal., and of the southwest quarter of the Lida 1-degree quadrangle, in Inyo County, Cal., and Esmeralda County, Nev., was completed by J. E. Blackburn and T. P. Pendleton, the total area mapped being 2,860 square miles, for publication on the scale of 1:250,000, with a contour interval of 100 feet. Of this area, 200 square miles are in Nevada.

*Idaho.*—The survey of the Panhandle 1-degree quadrangle in the Pend Oreille National Forest, in Kootenai, Shoshone, Saunders, and Lincoln counties, was continued by J. W. Muller and T. P. Pendleton, the total area mapped being 491 square miles, for publication on the scale of 1:250,000, with a contour interval of 200 feet. The survey of the Wayan quadrangle, which lies partly in the Caribou National Forest, in Bannock and Bear Lake counties, was continued by Albert Pike and W. O. Tufts, the total area mapped being 220 square miles, for publication on the scale of 1:62,500, with a contour interval of 50 feet. For the control of the Wayan quadrangle 73 miles of primary levels were run and 20 permanent bench marks were established by Mr. Tufts, D. S. Birkett, and O. G. Taylor, and 6 triangulation stations were occupied and 4 marked by G. T. Hawkins. For the control of the Lolo quadrangle L. F. Biggs ran 75 miles of primary levels and set 18 permanent bench marks.

*Idaho-Montana.*—The survey of the St. Regis and Taft quadrangles, in the Cœur d'Alene National Forest, in Shoshone County, Idaho, and Missoula and Sanders counties, Mont., was commenced by J. E. Blackburn, the total area mapped being 135 square miles, of which 35 are in Montana, for publication on the scale of 1:125,000, with a contour interval of 100 feet. For the control of the Salmon quadrangle, lying partly in the Shoshone National Forest; and the Dillon quadrangle, in Lemhi County, Idaho, and Beaverhead

County, Mont., W. H. Barringer ran 89 miles of primary levels and established 19 permanent bench marks. A profile survey of Salmon River, in the Salmon, Idaho, and Nez Perce national forests, was also commenced by Mr. Barringer and continued by O. G. Taylor, the total number of miles traversed being 107.

*Oregon.*—The State engineer of Oregon allotted $2,500 for the continuation of the cooperative topographic surveys in that State, which was met by a like sum for the same purpose from the United States Geological Survey. The survey of the Willamette Valley was continued and resulted in the completion of the Halsey 15-minute quadrangle (Shedds and Peoria 7½-minute) in Linn and Benton counties, the total area mapped being 108 square miles, for publication on the scale of 1:62,500, with a contour interval of 7 feet; and of parts of the Monroe, Albany, and Brownsville quadrangles, in Linn and Benton counties, the area mapped being 21 square miles, for publication on the scale of 1:62,500, with a contour interval of 5 feet. This work was done by H. L. McDonald, E. R. Bartlett, A. J. Ogle, J. M. Rawls, and A. F. McNair. For the control of these areas A. Finlay, J. M. Rawls, and A. G. Humphreys ran 101 miles of primary levels and established 28 permanent bench marks. The survey of the Boring and Oregon City quadrangles, in Multnomah and Clackamas counties, was begun by J. H. Wheat, the area mapped being 18 square miles, for publication on the scale of 1:62,500, with a contour interval of 25 feet. For the control of these areas C. F. Urquhart ran 82 miles of primary traverse and set 16 permanent marks, and E. M. Bandli ran 33 miles of primary levels and established 10 permanent bench marks. The survey of the Pine quadrangle, in the Wallowa National Forest, in Baker and Union counties, was commenced by S. G. Lunde and G. S. Smith, the area mapped being 49 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. In addition to the cooperative work, the survey of the Cazadero quadrangle, in the Oregon National Forest, in Clackamas and Multnomah counties, was commenced by A. E. Murlin, the area mapped being 49 square miles, for publication on a scale of 1:125,000, with a contour interval of 100 feet. For the control of this area E. M. Bandli ran 124 miles of primary levels and established 35 permanent bench marks, and O. C. Kintner ran 137 miles of primary traverse and set 23 permanent marks.

*Oregon-Washington.*—The survey of the Mount Hood special quadrangle, which lies partly in the Bull Run National Forest, in Multnomah, Clackamas, and Wasco counties, Oreg., and Clarke and Skamania counties, Wash., was continued by R. M. La Follette and T. P. Pendleton, the area mapped being 251 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. Of the area mapped, 105 square miles lies in Washington.

*Utah.*—The survey of the Sunnyside quadrangle, in Carbon County, was commenced by T. M. Bannon and S. P. Floore, the area mapped being 65 square miles, for publication on the scale of 1:62,500, with a contour interval of 50 feet. For the control of this quadrangle and of the Salt Lake, Fort Douglas, Provo, Millfork, Soldiers Summit, Kyune, Castlegate, Wellington, Mounds, Grassy, and Beckworth Peak quadrangles, in Utah and Salt Lake counties, L. F. Biggs ran 535 miles of double primary levels and established 60 permanent bench marks. For the control of the Kyune, Wellington, Soldiers Summit, Westwater, Mount Wass, Moab, Ninemile Creek, Sunnyside, and Tidwell quadrangles, in Carbon, Emery, Grand, Utah, and Wasatch counties, T. M. Bannon occupied 22 triangulation stations and marked 31.

*Utah-Wyoming.*—The survey of the Randolph quadrangle, which lies partly in the Cache National Forest, in Rich and Cache counties, Utah, and Uinta County, Wyo., was completed by A. E. Murlin, the total area mapped being 442 square miles, for publication on the scale of 1:125,000, with a contour interval of 100 feet. Of the area mapped, 27 square miles lie in Wyoming.

*Washington.*—Under the allotment of $12,500 each, made by the Board of Geological Survey of Washington, and the United States Geological Survey, topographic mapping was continued and resulted in the completion of the mapping of the Beverly and Moses Lake quadrangles, in Grant County, and of part of the Cedar Lake quadrangle, in King and Pierce counties, the total area mapped being 526 square miles—276 for publication on the scale of 1:62,500, and 385 for publication on the scale of 1:125,000. This work was done by W. O. Tufts, Robert Muldrow, C. F. Eberly, O. G. Taylor, and L. R. Ebert. The survey of the Palisades quadrangle, in Grant County, and of the Grays Harbor quadrangle, in Pacific County, was begun by H. L. McDonald and Charles Hartmann, the total area mapped being 38 square miles, for publication on the scale of 1:62,500, with a 25-foot contour interval. For the control of the Moses Lake and Cedar Lake quadrangles, D. S. Birkett ran 191 miles of primary levels and established 42 permanent bench marks; G. T. Hawkins and O. C. Kintner ran 267 miles of primary traverse and set 22 permanent marks. For the control of the Grays Harbor quadrangle, G. L. Hagman ran 56 miles of primary levels and set 14 permanent bench marks. Profile surveys were also made by Bayard Knock, W. B. Lewis, and T. H. Moncure of portions of Cowlitz, Cispus, Nisqually, Carbon, Puyallup, White, American, Bumping, Naches, and Tieton rivers, the total distance traversed being 434 miles. In addition to the cooperative work in Washington, a survey of the Mount Rainier National Park, in Pierce County, was started by F. E. Matthes and G. R. Davis, the total area mapped being 36 square miles, for publication on the scale of 1:62,500, with a contour interval of 100 feet. For the control of this area E. M. Bandli ran 45 miles of primary levels and established 12 permanent bench marks.

*Hawaii.*—In 1909 a cooperative agreement was entered into between the superintendent of public works of the Territory of Hawaii and the United States Geological Survey whereby the Survey loaned instruments and detailed topographers to the Territory to begin the topographic survey of the island of Kauai, the entire expense of the work, including transportation of instruments and salaries and expenses of the topographers, being borne by the Territorial government. Under this arrangement a portion of the island of Kauai embracing 374 square miles was surveyed prior to June 30, 1910. This work was done by G. R. Davis, H. L. McDonald, A. J. Ogle, O. G. Taylor, A. T. Fowler, J. L. Lewis, T. H. Moncure, W. H. Barringer, and C. H. Birdseye, under the immediate charge of Mr. Birdseye, topographer. For the control of this area L. F. Biggs ran 184 miles of primary levels and established 44 permanent bench marks.

On July 1, 1910, an agreement was entered into for the fiscal year beginning July 1, 1910, and ending June 30, 1911, whereby the Territory allotted $15,000 and the United States Geological Survey $5,000 for the continuation of the cooperative survey of the island of Kauai, begun in 1909. Since that date the mapping of the island of Kauai has been completed, the area mapped being 173 square miles, making a total area surveyed of 547 square miles, for publication on the scale of 1:62,500, with a contour interval of 50 feet, in one sheet as the island of Kauai. A map of a portion of this area, embracing about 100 square miles of irrigable land, will be published separately on the scale of 1:31,680, with a contour interval of 10 feet. After the completion of the mapping of the island of Kauai a survey was begun of the northern portion of the island of Hawaii, the area mapped to June 30, 1911, being 51 square miles, for publication on the scale of 1:62,500, with a contour interval of 50 feet. The work during this fiscal year was done by C. H. Birdseye, A. T. Fowler, and W. H. Barringer, under the immediate direction of Mr. Birdseye. For the control of these areas W. H. Barringer ran 178 miles of primary levels and established 60 permanent bench marks.

### OFFICE WORK.

The drafting of the following sheets was completed: Biggs, Gridley, Dayton, Durham, Newhard, Mount Goddard, Eddys, Salinas, Marysville Buttes, Bangor, Pennington, Dry Creek, Oroville, Honecut, Palermo, Mariposa, French Crossing, Keefers, Clear Creek, Randsburg (revision), Butte Creek, Nord, Nelson, and Tisdale Weir, Cal.; Ivanpah, Cal.-Nev.; Miami special, Ray special, and Petrified Forest, Ariz.; Salmon River profile, Idaho; Randolph, Utah; Moses Lake and Beverly, Wash.; Shedds and Peoria, Oreg.; Mana, Na Pali, Hanapepe, Kilauea, Kapaa, Lihue, Hanalei, and Waimea, Hawaii.

Progress in the drafting of additional sheets was made as follows: Soledad, Cal., 19 per cent; Big Bar, Cal., 80 per cent; Bishop, Cal., 15 per cent; Gonzales, Cal., 45 per cent; Singer Creek, Cal., 70 per cent; Ballarat, Cal.-Nev., 50 per cent; Panhandle, Idaho, 30 per cent; Wayan, Idaho, 20 per cent; Mount Hood, Oreg., 85 per cent; Cedar Lake, Wash., 25 per cent; Mount Rainier National Park, Wash., 11 per cent.

In the triangulation and computing section the following work was completed:

Primary level circuits in the Petrified Forest quadrangle (Ariz.) were adjusted.

Primary level circuits were adjusted and preliminary geodetic distances and positions were computed for the Byron, Holt, Lathrop, Stockton, Tracy, and Union Island quadrangles (Cal.). Primary level circuits in the Bakersfield, Caliente, McKittrick, Mojave, and Tejon quadrangles (Cal.) were adjusted, and preliminary geodetic distances and positions for the Avena, Clyde, Copperopolis, Monteca, Oakdale, Peters, and Trigo quadrangles (Cal.) were computed. A double primary line of levels run by the water resources branch in the Hanford quadrangle (Cal.) was adjusted.

Primary level circuits run with a prism level in the Kapaa, Lihue, Na Pali, and Waimea quadrangles, in Kauai Island, Hawaii, were adjusted.

A spur line of primary levels through the Junction, May, and Salmon quadrangles (Idaho-Mont.) was checked. Geodetic distances and positions in the Wayan quadrangle (Idaho-Wyo.) were computed.

Primary level circuits in the Brownsville and Halsey quadrangles (Oreg.) were adjusted, and latitudes, departures, and geographic positions for the Cazadero and Oregon City (Oreg.) and the Portland and Troutdale (Oreg.-Wash.) quadrangles were computed.

A primary level circuit extending through the Desert Lake, Moab, Price, Provo, Salt Lake, Scofield, Tidwell, and Woodside (Utah), and Mount Wass and Westwater (Utah-Colo.) quadrangles was adjusted, and geodetic distances and positions for the Castlegate, Kyune, Ninemile Creek, Poison Spring, Sunnyside, and Wellington quadrangles (Utah) were computed. A spur line of levels in the Sunnyside quadrangle (Utah) was checked.

Primary level circuits were adjusted, and latitudes, departures, and geographic positions were computed in the Cedar Lake, Seattle, Snoqualmie, Sultan, and Tacoma quadrangles (Wash.), and latitudes, departures, and geographic positions for the Mount Rainier quadrangle (Wash.) were computed. Primary level circuits in the Moses Lake quadrangle (Wash.), run by the United States Geological Survey, and in the Pasco and Wallula quadrangles (Wash.), run by the United States Reclamation Service, were adjusted.

Geodetic distances and positions in the Soda Springs quadrangle (Wyo.) were computed.

Level lists were revised and assembled, after necessary computations and readjustments had been made, and transmitted to the editor for publication as bulletins for the following States: Arizona (Bulletin 463), California (Bulletin 481), Idaho (Bulletin 487), Nevada (Bulletin 488), Oregon (Bulletin 462), Utah (Bulletin 489), and Washington (Bulletin 457). The manuscript for the report on the Idaho-Washington boundary line survey was assembled and transmitted to the editor for publication as Bulletin 466.

### INSPECTION OF TOPOGRAPHIC SURVEYING AND MAPPING.

The field time of the inspectors was devoted largely to regular and special topographic work. J. H. Renshawe spent the early part of the season on inspection duty in portions of the Atlantic, Central, and Rocky Mountain divisions, and six weeks in the fall in topographic sketching in the Quarryville quadrangle (Pa.). W. M. Beaman examined and revised 600 square miles in the Flagstaff quadrangle (Ariz.), surveyed and inked in the field the Ray special map (Ariz.), and started control for the Miami special map (Ariz.). F. E. Matthes was engaged during the field season in topographic work on the map of the Mount Rainier National Park, completing 36 square miles.

The office duties of Messrs. Renshawe and Beaman involved a careful supervision of the inking and preparation of the final drawings of the topographic branch and their final examination prior to submission for engraving or photolithography. Mr. Matthes's time was devoted to the inking of his field work and to the revision of the book of instructions for the topographic branch.

### INSTRUMENTS AND TOPOGRAPHIC RECORDS.

As in past years the repairs to all topographic instruments were made under the supervision of E. M. Douglas, who is also in charge of the topographic records.

The additions to the topographic records consisted of 263 triangulation or primary traverse books, 221 level books, nearly 300 vertical-angle or stadia books, and 125 plane-table sheets, all of which have been numbered and catalogued. Four new iron filing cases for records were purchased.

### MAP OF THE UNITED STATES.

Of the work begun last year on the 1:1,000,000 scale map of the United States, under the direction of A. F. Hassan, base maps of the following States have been completed: Vermont (portions of sheets K and L 18 and L 19), Massachusetts (portions of sheets K 18 and 19), Rhode Island (portion of sheet K 19), Connecticut (portions of sheets K 18 and 19), Michigan (portions of sheets K 16 and 17 and L 15, 16, and 17), Wisconsin (portions of sheets K and L 15 and 16), Minnesota (portions of sheets K, L, and M 14 and 15), Indiana (portions of sheets J and K 16), and North Carolina (portions of sheets I 16 and I and J 17 and 18). Seventy per cent of the lettering was completed on the New York and Pennsylvania portions of sheet K 18, and 80 per cent of the lettering on the Ohio portion of sheet K 17. The Ohio portion of sheet K 16 was lettered, completing the sheet, and 75 per cent of sheet J 18 was compiled and inked.

New work included the following:

Sheets K 14 and 15, Iowa portions, completed.

Sheets L and M 11, 12, and 13, Montana portions, 60 per cent compiled and inked.

Sheets K 12 and 13, Wyoming portions, 7 per cent compiled and inked.

Sheets H and I 15 and 16, Mississippi portion, 80 per cent compiled and inked.

Sheets H and I 16, the coastal plain area of Alabama, 80 per cent compiled and inked.

Sheet K 19, contours compiled for the land and ocean floor, and the sheet transmitted for engraving.

## WATER-RESOURCES BRANCH.

### AUTHORITY FOR INVESTIGATIONS.

The water-resources investigations of the year were made under the authority of the following clause in the sundry civil act:

> For gauging the streams and determining the water supply of the United States and for the investigations of underground currents and artesian wells, and for the preparation of reports upon the best methods of utilizing the water resources, one hundred and fifty thousand dollars.

The increase of $50,000 in the appropriation for investigations of water resources permitted a considerable extension of this work during the fiscal year. It was necessary, however, in order to perform important land-classification work in the West (see pp. 68–72) to allot 82 per cent of the total appropriation for work west of the one hundredth meridian.

### ALLOTMENTS.

The allotments of the appropriation for the fiscal year were as follows:

| | |
|---|---|
| Administrative expenses of the survey | $9,179 |
| Clerical assistance and supervision of work | 11,000 |
| Purchase of supplies, telegrams, etc | 800 |
| Computations, reports, and technical studies | 10,500 |
| Stream gagings in— | |
| New England and New York | 8,000 |
| Virginia, South Carolina, North Carolina, Georgia, Alabama, Mississippi, and Tennessee | 4,000 |
| West Virginia, Kentucky, Ohio, Indiana, and Illinois | 8,000 |
| Minnesota | 6,000 |
| Texas | 1,000 |
| Arkansas | 1,000 |
| Stream gagings and water-power investigations in— | |
| Southern Wyoming, Colorado, and New Mexico | 12,000 |
| Northern Wyoming, Montana, and North Dakota | 9,500 |
| Idaho, Utah, and Nevada | 11,000 |
| Washington and Oregon | 12,000 |
| California | 4,500 |
| Nevada and Arizona | 6,000 |
| Stream gagings in Hawaii | 5,000 |
| Investigations of ground water, including quality of water | 19,500 |
| Land-classification board | 4,000 |
| Water-power investigations | 6,200 |
| Débris investigations | 800 |
| Contingent | 21 |
| | 150,000 |

### COOPERATION.

#### STATES.

Cooperation with several States has been maintained as described in previous reports. The States and the amounts allotted by them are as follows:

*Amounts allotted by States for cooperative work with United States Geological Survey in investigations of water resources.*

| | |
|---|---|
| California | $9,000.00 |
| Colorado | 545.00 |
| Hawaii | 5,000.00 |
| Idaho | 5,000.00 |
| Illinois | 3,000.00 |
| Maine | 1,000.00 |
| Massachusetts | 825.00 |
| New York | 11,089.69 |
| New Mexico | 3,170.93 |
| Oregon | 2,500.00 |
| Utah | 2,000.00 |
| Vermont | 1,000.00 |
| Washington | 5,000.00 |
| | 49,130.62 |

The work performed under these agreements is outlined in the following paragraphs:

*California.*—The determination of stream flow; the survey of reservoir, dam, and canal sites for the development of irrigation, water power, and municipal supply; the study of underground waters.

*Colorado.*—The determination of stream flow for use in the development of irrigation and water power.

*Hawaii.*—The determination of stream flow, the survey of reservoir sites, the measurement of precipitation, and the determination of the occurrence, quantity, and character of underground waters.

*Idaho.*—The determination of stream flow.

*Illinois.*—The determination of stream flow, especially low waters and flood heights, for use as a basis for the drainage of swamp and overflow lands.

*Maine.*—The determination of stream flow and the survey of reservoir and dam sites.

*Massachusetts.*—The determination of stream flow.

*New York.*—There are two cooperative agreements in force in this State—one with the State engineer, in which $1,089.69 has been expended by each party for the determination of stream flow at points designated by the State engineer, and the other with the State water supply commission, in which the commission has allotted $10,000 and the survey $1,000, the money being devoted to the determination of stream flow for use in storage and the development of water power.

*New Mexico.*—The determination of stream flow for use in the development of water power and irrigation.

*Oregon.*—The determination of stream flow for use in the development of irrigation, municipal water supply, navigation, and water power.

*Utah.*—The determination of stream flow for use in irrigation and the development of water power.

*Vermont.*—The determination of the water resources of the State.

*Washington.*—The determination of stream flow for use in irrigation and the development of water power.

### RECLAMATION SERVICE.

Cooperation has also been maintained with the United States Reclamation Service. The rivers supplying water to the reclamation projects under construction by that bureau must necessarily be investigated to determine the amounts of water that they will yield for irrigation. This work, being specifically applied to these projects, becomes a proper charge thereon, and the Reclamation Service has deemed it of advantage to utilize the Survey engineers for this purpose, paying to the Survey, through transfer of funds in the Treasury Department, the actual cost of the investigations. During the last year 96 stations have been maintained under this cooperative agreement.

### OFFICE OF INDIAN AFFAIRS.

Cooperation has also been effected with the Office of Indian Affairs in connection with investigations of ground water. At the request of the Commissioner of Indian Affairs a study of ground-water supplies was undertaken in the Moqui and Navajo reservations of Arizona, New Mexico, and southern Utah, $1,500 being set aside for this purpose by the Indian Office.

Investigations of stream flow on Indian reservations have also been placed under the direction of the Geological Survey. The number of stations maintained under this arrangement is as follows: Idaho, 2; New Mexico, 3; Washington, 6; Wisconsin, 2. The cost of this work has been paid by transfer in the United States Treasury from the Indian Office appropriation.

### FOREST SERVICE.

The cooperation with the Forest Service during the year was merely a cooperation of services rendered in connection with the determination of stream flow in selected national forests. Stations were established by the United States Geological Survey, and their maintenance, operation, etc., was undertaken by the officials of the Forest Service, under the supervision of the Survey. The number of stations maintained under this arrangement is as follows:

*Stream gaging stations in national forests.*

| | |
|---|---|
| California | 51 |
| Colorado | 59 |
| Idaho | 7 |
| Montana | 14 |
| New Mexico | 7 |
| Oregon | 20 |
| Utah | 13 |
| Washington | 16 |
| Wyoming | 7 |

### PUBLICATIONS.

The work of the water-resources branch is represented by the following publications issued during the year: Professional Paper 72; Water-Supply Papers 237, 240, 246, 251, 253 to 258, 260, 262 to 265, and 270. Titles and brief summaries of these publications are given on pages 31–33. Water-Supply Papers 261, 266, 267 to 269, 271, 272 to 278, 286, and 288, and Bulletin 479 were at the Government Printing Office at the close of the year. Nine manuscripts are in hand awaiting editorial work, and 16 other reports are in different stages of preparation. Reprints of the following water-supply papers, the original edition of which has been exhausted, were ordered and delivered during the year: 165, 167, 168, 174, 175, 177, 180, 238, 239, 253, 255, and 260.

### ORGANIZATION.

The organization of the water-resources branch has been changed during the year to conform to the new conditions and objects of work. The investigation of water-power sites, rights of way, etc., was first performed by the engineers of the division of surface waters in connection with their measurements of stream flow. This plan, however, resulted in a division of interest in both kinds of work, so that neither received the attention that it required, even to the extent of the small allotments available for the purpose. A new division was therefore organized, the members of which give their entire time to the land-classification work. The organization is now as follows:

M. O. Leighton, chief hydrographer.
Division of surface waters: John C. Hoyt, engineer in charge.
Division of underground waters: W. C. Mendenhall, geologist in charge.
Division of water utilization: M. O. Leighton, engineer in charge.

## DIVISION OF SURFACE WATERS.

### MEASUREMENTS OF STREAM FLOW.

The work assigned to the division of surface waters consists of the measurement of the flow of rivers in the United States, which is divided into 14 districts, as follows:

Maine district, covering only the State of Maine: C. C. Babb, district engineer, State capitol, Augusta, Me.

New England district: New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, and New York. C. C. Covert, district engineer, Federal Building, Albany, N. Y.

Middle Atlantic district and computing section: Maryland, Virginia, and New Jersey. R. H. Bolster, district engineer, Washington, D. C.

Southeastern district: Alabama, Georgia, Mississippi, North Carolina, South Carolina, and Tennessee. M. R. Hall, district engineer, Post Office Building, Atlanta, Ga.

Ohio Valley district: Illinois, Indiana, Iowa, Kentucky, Michigan, North Carolina, Ohio, Tennessee, Virginia, West Virginia, and Wisconsin. A. H. Horton, district engineer, Federal Building, Newport, Ky.

Upper Mississippi district: Minnesota and Wisconsin. Robert Follansbee, district engineer, Old Capitol Building, St. Paul, Minn.

Upper Missouri district: Montana, North Dakota, and Wyoming. W. A. Lamb, district engineer, Montana National Bank Building, Helena, Mont.

Denver district: Colorado, Nebraska, New Mexico, South Dakota, and Wyoming. W. B. Freeman, district engineer, Chamber of Commerce Building, Denver, Colo.

Great Basin district: Idaho, Utah, Wyoming, and Nevada. E. C. LaRue, district engineer, Brooks Arcade, Salt Lake City, Utah.

Columbia River district: Oregon, Washington, and Idaho. F. F. Henshaw, district engineer, Tilford Building, Portland, Oreg.

California district: California, Nevada, and Arizona. W. B. Clapp, district engineer, Federal Building, Los Angeles, Cal.

Texas district, covering only the State of Texas: T. U. Taylor, resident engineer, Austin, Tex.

Hawaiian district, covering the Territory of Hawaii: F. W. Martin, district engineer, Honolulu, Hawaii.

Alaskan district, covering the Territory of Alaska: C. E. Ellsworth, engineer in charge.

The results of the work performed in these districts are compiled and computed for publication by the computing section in the Washington office, under the charge of R. H. Bolster, assistant engineer. The distribution of the gaging stations by States is shown in the accompanying table, together with the number of stations established and discontinued and the number of measurements made. As a large part of the work is carried on in cooperation with other Federal bureaus, State organizations, and private parties, the table has been arranged to show the extent of such cooperation in each State.

At the end of the year the total number of stations maintained (exclusive of those in Hawaii and Alaska) was 1,105. During the year 107 stations were discontinued and 420 stations were established; 4,975 measurements were made at regular stations and 596 miscellaneous measurements were made. In addition to the foregoing, records ready for publication were received at the end of the year from private parties for about 100 stations.

*Gaging stations and cooperating parties for the fiscal year 1910.*

| State. | Geological Survey alone. | Reclamation Service. | Forest Service. | Indian Office. | Army Engineers. | Weather Bureau. | Other Federal bureaus. | States. | Municipalities. | Private parties. | Counted more than once. | Maintained June 30, 1911. | Established during year. | Discontinued during year. | Regular measurements during year. | Miscellaneous measurements during year. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alabama |  |  |  |  | 1 | 2 |  | 5 |  |  |  | 8 |  |  | 7 |  |
| Arizona | 10 |  |  |  |  |  |  |  |  |  |  | 10 | 10 |  | 42 | 22 |
| California |  | 8 | 51 |  |  |  |  | 43 | 24 | 7 |  | 133 | 71 | 6 | 542 | 164 |
| Colorado | 4 | 1 | 59 |  |  |  |  | 18 |  | 6 | 3 | 85 | 59 | 14 | 1,102 | 55 |
| Connecticut |  |  |  |  |  | 2 |  |  |  |  |  | 2 |  |  | 1 |  |
| Georgia | 3 |  |  |  |  | 9 |  |  |  | 5 |  | 17 | 1 |  | 50 |  |
| Idaho |  | 4 | 7 | 2 |  | 1 |  | 63 |  | 10 | 12 | 75 | 44 | 11 | 378 | 31 |
| Illinois |  |  |  |  |  | 2 |  | 22 |  |  |  | 24 | 1 |  | 118 | 1 |
| Indiana |  |  |  |  |  | 1 |  |  |  |  |  | 1 |  |  | 1 | 1 |
| Iowa |  |  |  |  |  |  |  |  |  | 1 |  | 1 |  |  |  |  |
| Kentucky |  |  |  |  |  | 2 |  |  |  | 1 |  | 3 | 3 |  | 20 | 4 |
| Maine |  |  |  |  |  |  |  | 21 |  | 12 | 5 | 28 | 1 | 1 | 60 | 1 |
| Maryland | 2 |  |  |  |  |  |  |  |  |  |  | 2 |  |  |  |  |
| Massachusetts |  |  |  |  |  |  |  | 12 | 4 | 4 | 4 | 16 | 4 | 4 | 48 | 3 |
| Michigan |  |  |  |  |  |  |  | 1 | 1 | 6 |  | 8 |  |  |  |  |
| Minnesota |  |  |  |  |  | 2 |  | 42 |  | 3 | 5 | 42 | 3 | 5 | 116 | 5 |
| Mississippi | 1 |  |  |  |  | 1 |  | 7 |  |  |  | 9 |  |  |  |  |
| Montana | 35 | 51 | 14 |  |  | 1 |  | 16 |  | 4 | 1 | 120 | 41 | 10 | 564 | 12 |
| Nebraska |  |  |  |  |  |  |  | 7 |  |  |  | 7 | 1 | 1 | 43 |  |
| Nevada | 7 | 1 |  |  |  | 1 |  | 1 |  | 3 |  | 13 | 10 |  | 30 | 12 |
| New Hampshire | 2 |  |  |  |  |  |  |  |  | 7 |  | 9 | 2 |  | 11 |  |
| New Jersey | 1 |  |  |  |  | 2 |  |  |  |  |  | 3 |  |  |  |  |
| New Mexico |  |  | 7 | 3 |  |  |  | 40 |  | 3 | 13 | 40 | 15 | 3 | 225 | 35 |
| New York |  |  |  |  | 1 | 3 |  | 36 | 3 | 1 | 6 | 38 | 22 | 15 | 173 | 33 |
| North Carolina | 5 |  |  |  |  | 1 |  |  |  |  |  | 6 |  | 2 | 18 | 9 |
| North Dakota | 8 |  |  |  |  |  |  |  |  |  |  | 8 |  |  | 18 | 2 |
| Ohio | 1 |  |  |  |  | 4 |  | 1 |  |  |  | 6 | 2 |  | 16 | 3 |
| Oregon |  | 7 | 20 |  |  | 4 |  | 126 | 1 | 43 | 75 | 126 | 49 | 7 | 275 | 43 |
| Rhode Island |  |  |  |  |  |  |  | 3 |  |  |  | 3 |  | 1 |  |  |
| South Carolina |  |  |  |  |  | 1 |  |  |  |  |  | 1 |  | 3 |  |  |
| Tennessee | 2 |  |  |  |  | 8 |  |  |  |  |  | 10 | 3 |  | 17 |  |
| Texas | 1 |  |  |  |  | 3 |  |  |  |  |  | 4 | 4 |  | 22 | 19 |
| Utah |  |  | 13 |  |  | 1 |  | 21 | 1 | 2 | 1 | 37 | 3 | 11 | 327 | 5 |
| Vermont |  |  |  |  |  |  |  | 8 |  | 7 | 7 | 8 | 8 | 9 | 20 | 30 |
| Virginia | 9 |  |  |  |  | 1 |  |  |  | 3 |  | 13 |  |  | 19 |  |
| Washington |  | 21 | 16 | 6 |  |  | 1 | 138 | 3 | 16 | 63 | 138 | 43 | 4 | 588 | 96 |
| West Virginia | 18 |  |  |  | 2 | 4 |  |  |  | 1 |  | 25 | 4 |  | 42 | 5 |
| Wisconsin |  |  |  | 2 |  | 1 |  |  |  | 5 |  | 8 | 2 |  | 5 | 1 |
| Wyoming | 8 | 3 | 7 |  |  |  |  |  |  |  |  | 18 | 14 |  | 77 | 4 |
|  | 117 | 96 | 194 | 13 | 4 | 57 | 1 | 631 | 37 | 150 | 195 | 1,105 | 420 | 107 | 4,975 | 596 |

In Alaska 54 gaging stations were maintained in the Yukon-Tanana region for an average period of 143 weeks, furnishing data on the water resources of about 4,700 square miles; 15 gaging stations were also maintained for about 170 weeks in Seward Peninsula, yielding data on the run-off of approximately 1,800 square miles.

The data in connection with the investigation in the Territory of Hawaii have not yet been assembled for publication. Excellent progress, however, has been made in this Territory in spite of local difficulties.

The standard of the progress reports on stream measurements has been materially improved. The installation of a number of automatic gages of different patterns, each adapted to peculiar conditions, is also expected to make the records more accurate and to give a clearer insight into the laws governing stream flow.

Old-time records of stations maintained by the War Department and by the United States Weather Bureau are being carefully investigated and by means of discharge measurements made during previous years and complete studies and adjustments of the discharge data it will be possible to obtain for a large number of stations long-time records of daily discharge. The longest record thus far obtained is for Ohio River at Wheeling, W. Va., from 1838 to date. It is expected that these investigations will throw light on the much-discussed problems of the relation of run-off to precipitation and the effect of deforestation on river discharge.

To facilitate the use of Government reports relating to water supply, climate, and related subjects, the United States has, by agreement between the Geological Survey and the Weather Bureau, been divided into 12 areas and the progress report of stream gaging has been divided into 12 parts, each part covering one of these areas. The areas and the numbers of the corresponding reports giving the results for 1909 and 1910 are shown in the table below. The reports for 1910 have not yet been published.

*Reports on surface-water supply of the United States.*

| | Water-Supply Paper No. | |
|---|---|---|
| | 1909 | 1910 |
| North Atlantic coast | 261 | 281 |
| South Atlantic coast and eastern Gulf of Mexico | 262 | 282 |
| Ohio River basin | 263 | 283 |
| St. Lawrence River basin | 264 | 284 |
| Upper Mississippi River and Hudson Bay basins | 265 | 285 |
| Missouri River basin | 266 | 286 |
| Lower Mississippi River basin | 267 | 287 |
| Western Gulf of Mexico | 268 | 288 |
| Colorado River basin | 269 | 289 |
| Great Basin | 270 | 290 |
| California | 271 | 291 |
| North Pacific coast | 272 | 292 |

### RIVER-PROFILE SURVEYS.

During the year all river-profile surveys were performed by the topographic branch, except certain incidental surveying in the upper Mississippi district by Robert Follansbee in St. Louis, Ottertail, Cloquet, and Vermilion rivers, and on certain rivers draining into Lake Superior.

### DÉBRIS INVESTIGATION.

A report on the investigation of the natural laws governing the transportation of material of rivers has been in preparation by G. K. Gilbert. This is based on the results of nearly four years' laboratory experimentation in California, and the laws discovered by the studies will undoubtedly be extremely valuable to the engineering profession.

### DIVISION OF GROUND WATERS.

At the beginning of the fiscal year 1910–11 an allotment of $19,500 was made from the appropriation for gaging streams, to be used by the division of underground waters for investigating ground-water problems in the United States. In addition to this direct allotment, $1,500 was set aside by the Office of Indian Affairs for a special study of conditions on the Moqui-Navajo Reservations in Arizona and New Mexico.

Of the direct allotment, $2,000 was transferred to the geologic branch for use in the cooperative work carried on under the supervision of that branch in the States included in the Atlantic and Gulf Coastal Plain. The results of this work are summarized in the report of the geologic branch.

A small sum was set aside at the beginning of the year for completing the field work involved in the preparation of a report on California springs by G. A. Waring, who, as indicated in the last annual report, severed his connection with the Survey early in September, 1910. Previous to his departure, but during the present fiscal year, he spent a month in field work in California, completed the first draft of his manuscript, and delivered it for editorial revision and review. Some progress has been made in the work necessary to prepare it for publication.

R. B. Dole, assistant chemist, was assigned to the San Joaquin Valley, in California, where he spent three months in a study of the composition of the underground waters. Several hundred field assays and a smaller number of complete analyses were made and are now being assembled in the form of a report, which it is expected will be completed early in the next fiscal year.

In August the division of underground waters was strengthened by the transfer to it from the Reclamation Service of Herman Stabler, qualified as a chemist and engineer. Mr. Stabler was assigned to the San Joaquin and San Jacinto valleys, in California, to study the results of experience in irrigation by the use of pumping plants, to determine especially the cost of pumped water under various conditions and the relative value of the different pumping devices in use. About 60 pumping plants were tested, and a report on the experiments in the San Jacinto Valley has been prepared. The report on the San Joaquin Valley work is as yet incomplete.

These two researches in the San Joaquin Valley are intended to supplement geologic and statistical studies of the development of the underground waters in this great valley, and their results will eventually be combined with the results of those studies in a general report on the area.

By cooperation with the city of Los Angeles, Cal., an investigation of the relation of ground-water supplies to run-off, on the one hand, and to loss through evaporation and other forms of drainage, on the other, has been undertaken in Owens Valley by Charles H. Lee. Careful measurements of all streams tributary to this valley and of evaporation from soil surfaces under various conditions of ground-water level have been made. It is expected that the report embodying the results of this work will constitute a contribution to our knowledge of certain fundamental facts involved in all ground-water problems—facts which heretofore it has not proved feasible to investigate, although their importance has long been recognized.

One of the most important single researches undertaken during the year is that of Sulphur Spring Valley, Ariz., extending from Douglas, on the Mexican line, northward beyond Willcox. This work has been undertaken as a result of a cooperative agreement with the Arizona Experiment Station, R. H. Forbes, director, and has been in charge of O. E. Meinzer, of the Geological Survey. It involves reconnaissance topographic work and careful studies of ground-water levels, of the costs of recovery by pumping, of the chemical character of the ground waters and of the soils, and of other facts bearing generally on the problems of irrigation by means of underground waters. The preparation of a report embodying the results of this research is well advanced toward completion at the close of the fiscal year.

At the beginning of the year a small allotment was made through the geologic branch to N. H. Darton to enable him to procure results that can be embodied in a water-supply paper on the area about Deming, N. Mex. This work was extended southward from Deming to a point within 15 or 20 miles of the Mexican border, but was not completed during the fiscal year. An additional small allotment will be made during the year 1911–12 to permit the completion of this work.

The report on the underground waters of Iowa, the preparation of which, in cooperation with the State Survey, has been under way for some time, was received in rough draft late in the fiscal year, and at its close is undergoing revision. Direct supervision over this report has been exercised by Prof. W. H. Norton, of Mount Vernon, Iowa, and the document will be issued as the joint product of the State and Federal surveys.

A similar report on the geology and water resources of Minnesota, submitted for publication during the previous fiscal year, has been advanced through the various stages of editorial revision and publication, and was issued just before the close of the present fiscal year.

C. H. Gordon, of Knoxville, Tenn., completed the rough draft of his report on the geology and underground waters of the Wichita region of north-central Texas during the year, and submitted it for revision and comment. This completes the series of reports that have been prepared for the Survey by Prof. Gordon.

The special investigations undertaken for the Office of Indian Affairs in the Moqui and Navajo reservations in Arizona have been carried out by Prof. H. E. Gregory, of the Survey staff and of Yale University. The results of these studies are not prepared for publication, but are presented in the form of manuscript reports intended to serve as practical guides to engineers and agents of the Indian Office. These manuscripts are transmitted directly to the Commissioner of Indian Affairs for his information.

A study of the quality of the surface waters of Washington, commenced in 1909, has been completed in cooperation with the Washington State Board of Health as one of a series of reports dealing specifically with the quality of the surface waters of the United States. The chemical laboratory for which quarters were courteously furnished by the University of Washington has been discontinued and a report on the work, to be published as a water-supply paper, is being prepared by Walton Van Winkle, who was in direct charge of the investigations for the Survey. Samples of water were collected daily for a year from the principal rivers of Washington at 17 stations and were united in sets of convenient number; the composites thus obtained were subjected to mineral analysis. In addition, determinations of turbidity, color, and alkalinity were made daily on several streams, and samples were also collected daily for six months at Albany, Oreg., from Willamette River, one of the largest tributaries of the Columbia. The results of these examinations as presented in Mr. Van Winkle's report furnish definite, reliable information regarding the chemical composition of the surface waters of Washington, the changes to which they are subject, and their availability as domestic and industrial supplies and for irrigation. Coupled with other observations that have been made they supply means for estimating the rate of chemical denudation in the State and the conditioning effect of the geologic structure of the region.

In addition to the investigations outlined above, a large amount of miscellaneous work has been performed by the division during the year. R. B. Dole, for example, in addition to the California work for which he is directly responsible, has maintained general supervision over investigations of the quality of water in different parts of the United States and has revised chapters on the chemistry of water in all reports that have been submitted for publication. More or less of the energy of the division has been absorbed in making enlarged-homestead designations under the authority of the act of February 3, 1909, and in preparing reports on lists presented by the public-land States for segregation under the Carey Act. The results of work of this type have been presented through the land-classification board in the geologic branch.

## DIVISION OF WATER UTILIZATION.

### SCOPE OF THE WORK.

The work of the water-resources branch includes the investigation of power sites and other matters on the public lands; the investigation of water powers, floods, and river profiles, and the preparation of reports thereon for publication; the investigation of the run-off of rivers that drain lands proposed by the Secretary of Agriculture for purchase as national forests, and the interpretation of the data obtained to determine whether or not the control of such lands would promote or protect navigation.

### WATER-POWER SITES.

A statement of the lands recommended either for withdrawal or for restoration for water-power sites, with all similar matters in connection therewith, such as reports on applications for right of way, enlarged-homestead designations, and Carey Act segregations, is given in detail in the report of the land-classification board.

During 1910 areas aggregating over 650,000 acres not previously examined were investigated by engineers of the water-resources branch in connection with water-power withdrawals.

The work of preparing reports on water-power sites and collateral matters is done in conformity with that portion of the sundry civil appropriation act providing for the preparation of "reports on the best methods of utilizing the water resources."

### ACQUISITION OF LANDS.

Just before the close of the fiscal year investigations of stream flow were made in the White Mountain region of New Hampshire to determine the relation of forest cover to stream flow. This region has been designated by the Secretary of Agriculture for purchase as a national forest, and the examination is being made in accordance with the requirements of the Weeks Act.

## PUBLICATION BRANCH.

### BOOK-PUBLICATION DIVISION.

#### SECTION OF TEXTS.

The publications of the year consisted of 1 annual report, 2 professional papers, 33 bulletins, 23 advance chapters from 5 bulletins, 16 water-supply papers, 54 advance chapters from the annual report on mineral resources for 1909, 7 advance chapters from the annual report on mineral resources for 1910, 5 geologic folios, 43 press bulletins, and a number of pamphlets. These publications were the Thirty-first Annual Report; Professional Papers 68 and 72; Bulletins 381 (published also in 4 advance chapters), 425 to 427, inclusive, 429, 430 (published also in 10 advance chapters), 431 (published also in 2 advance chapters), 432 to 447, inclusive, 449, 452, 453, 457, 459 to 463, inclusive, 465, and 7 separates from 470; Water-Supply Papers 237, 240, 246, 251, 253 to 258, inclusive, 260, 262 to 265, inclusive, and 270; 54 (all) advance chapters from Mineral Resources for 1909; 7 advance chapters from Mineral Resources for 1910; 5 geologic folios (published in folio and octavo form); a list of publications; a list of topographic maps and folios and geologic folios; "Regulations and instructions of the United States Geological Survey;" a chart showing mineral products of the United States, 1900–1909; a chart showing production of coal in the United States from 1814; and Press Bulletins 428 to 458, inclusive, and new series 1 to 7, inclusive (also 5 special issues). Titles and summaries of the publications of the regular series are given on pages 22–35.

The total number of printed pages in these publications was 13,566; the publications of the previous year comprised 12,855 pages.

During the year 40,648 pages of manuscript were edited and prepared for printing, and proof sheets for 17,417 final printed pages were read and corrected, this work involving the handling of 5,787 galley proofs and 32,706 page proofs. The corresponding figures for 1909–10 were 29,057 pages of manuscript, 12,517 final printed pages, 4,893 galley proofs, and 28,005 page proofs. Indexes were prepared for 74 publications, covering 14,400 pages; the figures for the previous year were 56 publications and 10,782 pages.

The press bulletin was prepared in this section until April 1, 1911.

The copy and proofs of all account and record books and blanks, circulars, office cards, etc., are examined in this section. This work consumes a large part of the time of one person, but it is not practicable to report the amount statistically.

The division of mineral resources, the water-resources branch, and the library rendered special assistance in copy preparing and proof reading.

At the close of the year the personnel of the section consisted of the editor, the assistant editor, 4 editorial clerks, and 1 stenographer and typewriter.

### SECTION OF ILLUSTRATIONS.

During the year 3,990 illustrations were prepared and most of them were transmitted, to accompany 39 bulletins, 24 water-supply papers, 5 professional papers, 1 annual report, and 1 report on mineral resources. These illustrations included 267 maps, 1,119 diagrams, 1,720 paleontologic drawings, 4 landscape drawings, 587 photographs retouched, and 234 miscellaneous pieces.

The section received and compared critically 2,379 proofs, as well as all contract-printed inserts delivered at the Government Printing Office.

The number of electrotypes furnished to outside applicants was 157.

At the close of the year material for the illustration of 29 reports was on hand, 17 being from 50 to 90 per cent completed.

The personnel of the section consisted of 10 draftsmen (including the draftsman in charge) and 1 copyist clerk.

### SECTION OF GEOLOGIC MAPS.

Twenty-two folios have been in hand in various stages during the year. Five folios (Nos. 172 and 174 to 177, inclusive), which are listed and described on pages 34–35, were published. The Foxburg-Clarion, Pawpaw-Hancock, Claysville, and Bismarck folios were completed with the exception of the printing of the descriptive text, and the maps of the Raritan, Choptank, and Llano-Burnet folios were nearly finished. The engraving of the Ellijay, Murphysboro-Herrin, and Kenova folios was begun. The Springfield-Tallula, Apishapa, and Colorado Springs folios were received for publication and the maps were in part prepared for engraving. Some editorial revision has been done on the San Francisco, Galatia, and other folio maps. The list of folios in course of publication and in preparation for publication, arranged in the order of progress, is as follows:

Foxburg-Clarion, Pa. (No. 178).
Pawpaw-Hancock, W. Va.-Md.-Pa. (No. 179).
Claysville, Pa.
Bismarck, N. Dak.
Llano-Burnet, Tex.
Choptank, Md.
Raritan, N. J.
Murphysboro-Herrin, Ill.
Kenova, Ky.-Ohio-W. Va.
Apishapa, Colo.
Philipsburg, Mont.
Ellijay, Ga.-N. C.-Tenn.
Belleville-Breese, Ill.
Springfield-Tallula, Ill.
Barnesboro-Patton, Pa.
Eureka Springs-Harrison, Ark.
Colorado Springs, Colo.

The geologic map of North America was edited and proof read, and three of the four sheets comprising it were printed. The sheet for the southeast quarter is in press and the edition will soon be completed. This is the largest map ever issued by the Geological Survey. Twelve colors are used to represent the geology, in addition to the two colors of the base, and the map is an effective piece of lithographic work. It also supplies a long-existing demand for a geologic wall map of the United States that is accurate as to detail within the scale of the map and that represents the true state of geologic knowledge.

### SECTION OF TOPOGRAPHIC MAPS.

At the beginning of the year 97 atlas sheets and special maps were on hand for publication, and the accessions during the year were 140—a total of 237 maps, of which 23 are fractional atlas sheets that average about 50 per cent completed. The following statement shows the status of these 237 maps on June 30, 1911, and the similar record on June 30, 1910:

*Status of work on maps, June 30, 1910, and June 30, 1911.*

| | 1911 | 1910 |
|---|---|---|
| Published during the year | 86 | 93 |
| In process of engraving | 56 | 57 |
| Not taken up | 95 | 40 |

The manuscripts edited during the year comprise 88 new topographic atlas sheets and special maps prepared for engraving and 3 maps prepared for photolithography; corrections for 205 sheets heretofore published; 6 maps published under contract; parts of sheets K 15, I 17, J 17, K 16, and K 17 of the millionth scale map; and 199 map illustrations which are or will be included in 39 survey reports. The proof read comprises 76 new atlas sheets and special maps, corrections to 55 old ones, and 16 maps published under contract.

A new edition of the topographic and geologic index map of the United States was prepared, proof read, and published. All but one of the 21 circulars of the series 9–323 were revised and reprinted during the year. The conventional signs adopted by the committee on unification representing the map-making bureaus of the Government were arranged and prepared for publication on one sheet. The lists of topographic maps were revised to date and proof read for a new edition of the pamphlet "Topographic maps and folios and geologic folios."

Five men were engaged in the work of this section during the year.

### SECTION OF DISTRIBUTION.

The section of distribution received during the year 136 new books, 5 folios, 80 new maps, 11 revised maps (4 of which were the results of resurveys), 3 photolithographs, and 135 reprints of maps, a total of 370 publications. The total of all editions received was 498,886 books, 20,490 geologic folios, and 698,878 maps, a grand total of 1,218,254.

Reprints of the following publications were delivered to the Survey during the fiscal year: Bulletins 398, 406, 421, 424, and 431-A; Water-Supply Papers 165, 167, 168, 175, 177, 180, 238, 239, 253, 255 (two reprints), and 260; Mineral Resources of the United States, calendar year 1908, Parts I and II; and two advance chapters from Mineral Resources for 1909, namely, "The production of gold and silver in 1909" and "Petroleum operators' statistics of petroleum production."

During the year 488,930 books, 34,117 geologic and topographic folios, and 684,129 maps (including 517,777 sold), a total of 1,208,176, were distributed.

The total amount received and turned into the Treasury as the result of sales of publications was $21,583.55 ($19,230.20 of which was derived from the sale of topographic and geologic maps), an increase of $381 over the amount received in the fiscal year 1909–10.

Fifteen persons were engaged in the work of this section.

## DIVISION OF ENGRAVING AND PRINTING.

### MAPS, FOLIOS, AND ILLUSTRATIONS.

During the year ending June 30, 1911, 86 topographic atlas sheets and special maps were published, and at the end of the year 56 sheets were in various stages of progress toward publication. Besides the engraved maps, sheets Nos. 1, 2, and 3 of Willamette Valley, Oreg., were photolithographed and published.

Corrections were engraved on the plates of 192 maps hitherto published. Editions of 231 maps were printed and delivered to the map room. This includes new sheets (engraved and lithographed) and reprints.

Five geologic folios were published, three of them in two forms, and 20,490 copies of seven different folios were printed and delivered. Six geologic folios were in press at the close of the year and four others had been partly completed.

Under contracts with the Government Printing Office, awarded on competitive bids, illustrations were printed for the following survey publications: Monograph LII; Bulletins 91, 108, 234, 239, 381, 398, 406, 430, 431, 435, 438, 440, 443, 445, 447, 448, 450, 452, 454, 456; Professional Papers 70, 71, 75; Water-Supply Papers 240, 275; Mineral Resources, 1909; Thirty-first Annual Report of Director.

For the Government Printing Office also the following items were printed and delivered: Illustrations for the American Ephemeris and Nautical Almanac, Annual Report Chief of Engineers United States Army, Annual Report Commissioner of Indian Affairs, Annual Report Superintendent of Coast and Geodetic Survey, Annual Report Isthmian Canal Commission, Annual Report Superintendent Yosemite National Park, Twenty-second Annual Report on the Statistics of Railways, eight Senate and House documents, Annual Report Superintendent Crater Lake National Park, Annual Report Governor of Alaska, Annual Report Governor of Arizona, Annual Report Commissioner of Corporations, Annual Report Board of Regents Smithsonian Institution, Third Annual Report Superintendent Block and Train Signal Board.

The following work was done for other Government departments and bureaus: For the Forest Service, maps of 13 national forests, index map of the national forests of the United States, and map of North America showing natural forest regions; for the General Land Office, 964 township plats; for the Department of the Interior, maps of 2 national parks, 2 national monuments, 1 bird reservation, and 10 homestead maps of States and Territories; for the Reclamation Service, a large amount of miscellaneous work; for the Biological Survey, 3 maps of North America. Work was also done for the War Department, Navy Department, Department of State, Department of Justice, Department of Agriculture, Department of Commerce and Labor, Office of Indian Affairs, Isthmian Canal Commission, Bureau of Mines, Hydrographic Office, International Boundary Commission, Weather Bureau, Interstate Commerce Commission, Treasury Department, Army Service Schools, Tariff Board, and the District of Columbia. This work for other branches of the Government amounted to about $48,000, for which the division was reimbursed by transfer of credit on the books of the United States Treasury.

Of contract and miscellaneous printing of all kinds the total number of copies delivered was nearly 2,000,000 and required more than 4,500,000 printings. The total number of copies printed, including topographic maps and geologic folios, was 2,555,230, requiring nearly 8,000,000 impressions. On requisition of the Government Printing Office 351 transfer impressions were made and shipped to contracting printers.

### INSTRUMENT SHOP.

The work of the instrument shop consisted of repairing surveying, drafting, engraving, stream-gaging, and other instruments and making copper plates and electrotypes. More than 1,200 repairs and overhauls were made, 79,755 square inches of new copper plates were made and 954 square inches were resurfaced, and 10,710 square inches of electrotypes were made.

### PHOTOGRAPHIC LABORATORY.

The output of the photographic laboratory included 16,004 negatives, of which 11,603 were dry, 3,342 were wet, and 1,059 were paper; and 40,748 prints, of which 16,331 were maps and diagrams and 24,417 were photographs for illustrations.

## ADMINISTRATIVE BRANCH.

### EXECUTIVE DIVISION.

The work in the executive division was of the same scope as in other years, except for the transfer of the administrative bookkeeper to the division of disbursements and accounts. Considerable time was given by the chief of the division and two clerks to reports on various subjects for the use of the President's Commission on Economy and Efficiency. A special file of these reports and of the correspondence relating to them is maintained.

In many items the work performed by the division shows increase, in spite of the separation of the Bureau of Mines from the Geological Survey. The decreases mentioned below are due in large part to that separation.

*Mails, files, and records.*—During the year 134,386 pieces of incoming mail were handled in this division, an increase of 1 per cent over the number handled in the preceding fiscal year. Of this number 2,590 were registered, which is an increase of slightly more than 10 per cent over the preceding year. This number does not include the pieces of mail distributed unopened to the several branches, divisions, sections, and individuals in the Survey. Since March 1 a record of mail distributed unopened has been kept, and the number of pieces of such mail handled during the four months was 99,158.

Of the letters opened in this division, 26,076 contained remittances for Survey publications, a slight increase over the number of similar letters received during the last fiscal year, but the amount of money received, $23,790.18, is $68.68 less than last year.

The recording, referring, and filing of correspondence required the services of 5 clerks throughout the year. The number of letters mailed through the division was 92,126, an increase of about 8 per cent. Of this number 20,951 were registered, which is an increase of 73 per cent.

*Personnel.*—The roll of those holding Secretary's appointments numbered at the close of the fiscal year 862 persons, compared with 958 at the close of the fiscal year 1909–10. The total number of changes in the personnel for the year was 1,119, which included original appointments, separations, promotions, extensions, and changes of status of every description. Of these, 275 were new appointments, 370 were separations (including 53 transfers to the

Bureau of Standards and 140 transfers to the Bureau of Mines, organized July 1, 1910), 375 were promotions, and 6 were reductions.

During the year 12,794 days of annual leave and 3,396 days of sick leave were granted, being about 68 per cent of the amount of annual leave and 18 per cent of the amount of sick leave which it is permissible to grant under the law; also 3,239 days of leave without pay. In addition to the above there were 203 transfers to State pay rolls in cooperative work.

*Property.*—An inventory of nonexpendable property in Washington was submitted to the department at the close of the calendar year 1910.

*Express and freight.*—During the year 4,009 pieces of freight and express were handled, of which 1,427 were outgoing and 2,582 were incoming. This was a decrease of 10 per cent in the number of pieces handled. There were 451 transportation accounts checked, a decrease of about 20 per cent.

A change was made in the method of recording express and freight shipments so as to segregate the outstanding transportation accounts in the card record. Except for the rearrangement of the cards, which has been completed, this involved no additional clerical work, and it facilitates the checking of transportation accounts.

*Purchase and distribution of supplies.*—The purchase and distribution of supplies, which includes the work of procuring bids, issuing orders, and preparing vouchers covering all purchases in open market, required the services of 3 persons. The number of requisitions handled was 2,157, an increase of more than 7 per cent.

*Stationery.*—There were 7,148 requisitions filled from stock in the stationery room. The requisitions drawn on the department numbered 330 for miscellaneous supplies, 184 for stationery, and 430 for printing. These figures show an increase over those for 1910, except in requisitions for stationery and printing drawn on the department, and the decrease in those items is accounted for by the fact that the requisitions called for larger quantities than those drawn in previous years.

During the last half of the year the work of the stationery room has been reorganized. A simple but effective system of records has been established, including a stock record which shows at all times the condition of stock on hand and a file of requisitions by branches and divisions. Several new forms have also been issued, including invoices to accompany shipments of stationery supplies to the field and orders to indicate shortage of supplies which are out of stock. On account of assignments to other work, illness, and other causes the force in the stationery room has varied during the year, but it normally consists of 4 men, including the clerk in charge of the property records.

## DIVISION OF DISBURSEMENTS AND ACCOUNTS.

A condensed statement covering the financial transactions of the fiscal year is given below:

*Amounts appropriated for and expended by the United States Geological Survey pertaining to the fiscal year ended June 30, 1911.*

| Title of appropriation. | Appropriation. | Repayments. | Available. | Disbursements. | Balance. |
|---|---|---|---|---|---|
| Salaries, office of the Director | $34,860.00 | ............ | $34,860.00 | $34,591.98 | $268.02 |
| Salaries, scientific assistants | 29,900.00 | ............ | 29,900.00 | 29,899.90 | .10 |
| Skilled laborers, etc | 20,000.00 | ............ | 20,000.00 | 19,988.64 | 11.36 |
| Topographic surveys | 350,000.00 | $5.735.14 | 355,735.14 | 354,211.13 | 1.524.01 |
| Geologic surveys | 300,000.00 | 53.818.73 | 353,818.73 | 348,694.85 | 5,123.88 |
| Mineral resources of Alaska | 90,000.00 | 33,021.88 | 123,021.88 | 122,801.91 | 219.97 |
| Chemical and physical researches | 20,000.00 | 18.20 | 20,018.20 | 19,911.28 | 106.92 |
| Preparation of illustrations | 18,280.00 | ............ | 18,280.00 | 18,250.67 | 29.33 |
| Mineral resources of the United States | 75,000.00 | 65.60 | 75.065.60 | 74,235.26 | 830.34 |
| Gaging streams, etc | 150,000.00 | 23,944.69 | 173.944.69 | 172,853.95 | 1.090.74 |
| Books for the library | 2,000.00 | ............ | 2,000.00 | 991.29 | 1,008.71 |
| Geologic maps of the United States | 100,000.00 | 54,166.75 | 154,166.75 | 144,294.03 | 9,872.72 |
| Surveying national forests | 75,000.00 | 89.55 | 75,089.55 | 73,560.35 | 1,529.20 |
|  | 1,265,040.00 | 170,860.54 | 1,435,900.54 | 1,414,285.24 | 21,615.30 |

The following table gives the classified net expenditures by the Survey for the fiscal year, the repayments shown in the preceding table having been deducted:

*Classification of expenditures by the United States Geological Survey pertaining to the fiscal year ended June 30, 1911.*

| Appropriation. | Total. | Salaries and wages. | Traveling expenses. | Subsistence. | Stable service. | Freight and expressage. | Telegraph and telephone service. | Printing and engraving. | Heat, light, and power. | Special and miscellaneous service. | Materials. | Stationery and photographic supplies. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Salaries, office of the Director | $34,591.98 | $34,591.98 | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ |
| Salaries, scientific assistants | 29,899.90 | 29,899.90 | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ |
| Skilled laborers, etc | 19,988.64 | 19,988.64 | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ |
| Topographic surveys | 348,475.99 | 224,787.02 | $19,741.32 | $28,378.88 | $10,823.05 | $6,109.43 | $578.46 | $4,272.65 | $22.66 | $1,098.44 | $1,851.44 | $4,311.01 |
| Geologic surveys | 294,876.12 | 225,475.74 | 23,071.89 | 6,475.90 | 3,595.97 | 2,005.73 | 395.97 | 5,076.79 | 120.00 | 930.45 | 540.82 | 3,684.62 |
| Mineral resources of Alaska | 89,780.03 | 52,375.41 | 11,481.11 | 4,450.28 | 882.90 | 5,710.62 | 116.22 | 562.64 | ........ | 198.75 | 303.01 | 966.34 |
| Chemical and physical researches | 19,893.08 | 17,493.47 | 16.35 | 16.85 | ........ | 3.80 | 9.18 | 82.83 | 351.05 | 1.80 | 29.96 | 146.80 |
| Preparation of illustrations | 18,250.67 | 17,172.27 | ........ | ........ | ........ | 4.50 | 14.46 | 826.63 | ........ | ........ | 18.27 | 107.04 |
| Mineral resources of the United States | 74,169.66 | 63,893.51 | 3,668.22 | 2,475.59 | 26.70 | 356.48 | 756.32 | 290.26 | 9.19 | 214.00 | 47.21 | 342.93 |
| Gaging streams, etc | 148,909.26 | 105,129.98 | 13,674.82 | 7,874.70 | 523.50 | 2,421.91 | 682.74 | 2,238.79 | ........ | 775.12 | 2,186.53 | 1,568.53 |
| Books for the library | 991.29 | ........ | ........ | ........ | ........ | 17.37 | ........ | ........ | ........ | ........ | ........ | ........ |
| Geologic maps of the United States | 90,127.28 | 65,369.64 | 74.66 | 70.35 | ........ | 94.72 | 58.10 | 2,146.46 | 966.70 | 64.68 | 2,070.75 | 14,470.52 |
| Surveying national forests | 73,470.80 | 43,570.94 | 4,514.97 | 3,887.85 | 3,403.16 | 1,807.44 | 42.06 | 188.20 | ........ | 212.44 | 501.25 | 356.14 |
| | 1,243,424.70 | 899,748.50 | 76,243.34 | 53,629.90 | 19,255.28 | 18,532.00 | 2,653.51 | 15,685.25 | 1,469.60 | 3,495.68 | 7,548.74 | 25,953.93 |

| Appropriation. | Fuel. | Mechanics' supplies. | Laboratory supplies. | Wearing apparel. | Forage. | Provisions. | Special and miscellaneous supplies. | Equipment. | Live stock. | Rents. | Losses. | Repairs and replacements. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Salaries, office of the Director | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ |
| Salaries, scientific assistants | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ |
| Skilled laborers, etc | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ | ........ |
| Topographic surveys | $394.89 | $23.75 | $187.32 | $106.25 | $9.060.70 | $13,094.15 | $126.99 | $7,610.70 | $1.890.50 | $11.214.67 | ........ | $2,792.21 |
| Geologic surveys | 181.93 | 24.19 | 427.93 | 107.60 | 2,060.71 | 3,068.88 | 48.32 | 10,656.71 | 3.377.50 | 2,404.96 | ........ | 1,144.01 |
| Mineral resources of Alaska | 9.35 | 3.20 | 49.15 | 88.00 | 1,833.06 | 2,089.29 | 23.43 | 4.341.41 | 3,275.00 | 233.50 | $415.00 | 372.36 |
| Chemical and physical researches | .75 | .63 | 1,061.30 | ........ | ........ | ........ | ........ | 412.88 | ........ | 193.85 | ........ | 71.58 |
| Preparation of illustrations | ........ | ........ | ........ | ........ | ........ | ........ | ........ | 94.44 | ........ | ........ | ........ | 13.06 |
| Mineral resources of the United States | ........ | ........ | 12.95 | ........ | 1.70 | 7.50 | 23.28 | 1.288.62 | ........ | 739.70 | ........ | 15.50 |
| Gaging streams, etc | 45.40 | 12.55 | 100.88 | 205.85 | 242.45 | 189.83 | 65.71 | 2,436.45 | ........ | 6,794.94 | ........ | 1,738.58 |
| Books for the library | ........ | ........ | ........ | ........ | ........ | ........ | ........ | 973.92 | ........ | ........ | ........ | ........ |
| Geologic maps of the United States | 2.40 | 213.13 | 717.30 | 10.20 | ........ | ........ | 7.92 | 3,199.97 | ........ | ........ | ........ | 589.78 |
| Surveying national forests | 69.89 | 5.05 | 40.00 | 71.25 | 2,493.46 | 5,453.06 | 48.13 | 3,192.19 | 1,260.00 | 1,794.19 | ........ | 559.13 |
| | 704.61 | 282.50 | 2,596.83 | 589.15 | 15,692.08 | 23,902.71 | 343.78 | 34,207.29 | 9,803.00 | 23,375.81 | 415.00 | 7,296.21 |

## LIBRARY.

The library has received during the year, by purchase and exchange, 11,388 books and pamphlets and 875 maps, some of which are of temporary value only and will not be recorded as accessions to the permanent collection. The exchanges received during the year were notably valuable. A careful estimate shows that the library now contains 86,000 books, 100,000 pamphlets, and about 100,000 maps. Accessions are restricted as closely as possible to publications that consider subjects within the scope of the Survey's work and that will probably be of permanent value. Publications on other scientific subjects are transferred to the Library of Congress. Notwithstanding the efforts to confine the increase to the narrowest limits consistent with usefulness, the need of additional shelf room is now urgent.

The number of persons consulting the library during the year was 7,873, and 10,326 books and 521 maps were loaned for use outside.

Of the current receipts all material which is unquestionably of permanent value to the library is promptly recorded by full titles in the author and subject catalogues. Other material is recorded in briefer manner, classed, and shelved where it is available for use. During the year 5,812 volumes and 631 maps were catalogued.

Additions to the card catalogue during the year numbered 6,976. The Survey continues to furnish to the Library of Congress for printing on its cards the catalogue entries of geologic publications; of these entries 733 were supplied during the year.

The correspondence consisted of 4,528 letters received and 3,495 letters written and related largely to the exchange of publications. The demand for the publications of the survey is very active in the educational and scientific institutions throughout the world which have departments of geology or are interested in the subjects covered by the reports. The list of institutions to which full sets are distributed now numbers 355 in the United States and 582 in foreign countries, a total of 937. Publications that are of value to the library are received in exchange from most of the institutions on this list. The authorized distribution of the Survey publications from the office of the superintendent of documents, Government Printing Office, supplies public and school libraries and other institutions which have no exchange agreements with the Survey, and duplication of distribution is carefully avoided. To an additional list of 508 persons and institutions, domestic and foreign, selected publications are furnished in return for certain of their own publications supplied to the library. The gratuitous distribution of the topographic sheets to libraries is now practically up to the authorized number—500. The geologic folios are furnished to 375 libraries, in addition to the depository libraries, which receive the folios from the superintendent of documents, Government Printing Office.

The bibliography of North American geology for 1909 was completed and issued as Bulletin 444. It contained 1,305 author entries, an increase of 90 over the volume for 1908. The bibliography for 1910, with 1,410 author entries, will be ready for the printer in July, and will be published as Bulletin 495. A part of the time of the assistant librarian has been devoted to the preparation of indexes and of data to be incorporated in Professional Paper 71 ("Index to the stratigraphy of North America").

The personnel of the library consisted of the librarian, the assistant librarian, 2 cataloguers, and 3 other persons.

A fire in the store directly under the Survey library on Sunday afternoon, July 31, 1910, greatly endangered the library. Fortunately no books were destroyed, but the bindings of 200 or more were seriously damaged.

# REPORT OF THE DIRECTOR OF THE BUREAU OF MINES.

# REPORT OF THE DIRECTOR OF THE BUREAU OF MINES.

JOSEPH A. HOLMES, *Director*.

## ESTABLISHMENT OF THE BUREAU OF MINES.

The Bureau of Mines was established by an act of Congress (36 Stat., 369) approved May 16, 1910, and effective July 1, 1910. The demand for special recognition and aid from the Federal Government for the mining industry had been increasing for a number of years, especially among the metal-mining interests in the Western States, and from time to time bills looking to the creation of a national bureau or department of mines had been introduced in Congress by representatives of those States. At the time of the passage of the act establishing the bureau, however, the factors that were most effective in calling attention to the advisability of action by the Government were disasters in coal mines and a growing realization of the waste of both life and resources in the varied mining and metallurgical industries of this country.

## ORGANIC ACT.

The act establishing the bureau reads as follows:

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That there is hereby established in the Department of the Interior a bureau, to be called the Bureau of Mines, and a director of said bureau, who shall be thoroughly equipped for the duties of said office by technical education and experience and who shall be appointed by the President, by and with the advice and consent of the Senate, and who shall receive a salary of six thousand dollars per annum; and there shall also be in the said bureau such experts and other employees as may from time to time be authorized by Congress.

SEC. 2. That it shall be the province and duty of said bureau and its director, under the direction of the Secretary of the Interior, to make diligent investigation of the methods of mining, especially in relation to the safety of miners, and the appliances best adapted to prevent accidents, the possible improvement of conditions under which mining operations are carried on, the treatment of ores and other mineral substances, the use of explosives and electricity, the prevention of accidents, and other inquiries and technologic investigations pertinent to said industries, and from time to time make such public reports of the work, investigations, and information obtained as the Secretary of said department may direct, with the recommendations of such bureau.

SEC. 3. That the Secretary of the Interior shall provide the said bureau with furnished offices in the city of Washington, with such books, records, stationery, and appliances, and such assistants, clerks, stenographers, typewriters, and other employees as may be necessary for the proper discharge of the duties imposed by this Act upon such bureau, fixing the compensation of such clerks and employees within appropriations made for that purpose.

SEC. 4. That the Secretary of the Interior is hereby authorized to transfer to the Bureau of Mines from the United States Geological Survey the supervision of the investigation of structural materials and the analyzing and testing of coals, lignites, and other mineral fuel substances and the investigation as to the causes of mine explosions; and the appropriations made for such investigations may be expended under the supervision of the Director of the Bureau of Mines in manner as if the same were so directed in the appropriations Acts; and such investigations shall hereafter be within the province of the Bureau of Mines, and shall cease and determine under the organization of the United States Geological Survey; and such experts, employees, property, and equipment as are now employed or used by the Geological Survey in connection with the subjects herewith transferred to the Bureau of Mines are directed to be transferred to said bureau.

SEC. 5. That nothing in this Act shall be construed as in any way granting to any officer or employee of the Bureau of Mines any right or authority in connection with the inspection or supervision of mines or metallurgical plants in any State.

SEC. 6. This Act shall take effect and be in force on and after the first day of July, nineteen hundred and ten.

The above act was subsequently amended by a clause in the act making appropriations for the sundry civil expenses of the Government for the fiscal year 1911. This clause states:

> "So much of the Act establishing a Bureau of Mines, approved May sixteenth, nineteen hundred and ten, as transfers to said bureau the supervision of the investigations of structural materials and equipment therefor is repealed."

Another clause in the same act authorized the Bureau of Standards, of the Department of Commerce and Labor, to continue the investigation of structural materials belonging to or for the use of the United States.

## AIM AND PURPOSE OF THE BUREAU.

The general aim and purpose of the inquiries and investigations made by the bureau under the terms of the organic act are to increase health, safety, economy, and efficiency in the mining, quarrying, metallurgical, and miscellaneous mineral industries of the country.

## SITUATION OF BUILDINGS.

The headquarters of the Bureau of Mines are in the city of Washington, at Eighth and G Streets NW., where the administrative work and certain technologic investigations are conducted. The mining experiment station is in the city of Pittsburgh, Pa., at Fortieth and Butler Streets, on the Government reservation known as the Pittsburgh supply depot and under the control of the Quartermaster's Department of the Army. The station is temporarily housed in buildings on these grounds, under an agreement between the Secretary of War and the Secretary of the Interior. At the Pittsburgh station the principal investigations and technologic inquiries of the bureau are carried on. The bureau also has a small laboratory in the customhouse building, in San Francisco, Cal., for the investigation of fuel oils for the use of the Government and of injuries to the national forests from smelter fumes. It also operates six mine-safety stations and seven mine-safety or mine-rescue cars, the stations and cars being distributed one in each of the principal coal fields of the country.

## GROUNDS AND BUILDINGS IN PITTSBURGH.

A general plan of the grounds and buildings occupied by the experiment station in Pittsburgh is shown in figure 1.

The large chemical laboratories of the bureau are housed in building No. 21, immediately above Butler Street, and the rest of the work is carried on in buildings below or south of Butler Street, adjacent to the line of the Pennsylvania Railroad, on the banks of the Allegheny River. A spur from the Pennsylvania Railroad leads into the grounds. A small building (No. 9) is used for general offices; a part of a larger building (No. 10) is used for technical offices and for investigations of electricity in its applications to mining. The larger portion of this building was assigned by the Secretary of War to the Secretary of the Interior, but is temporarily occupied by equipment for the testing of structural materials under the Bureau of Standards of the Department of Commerce and Labor. The fuels-testing laboratories and power plant are in building No. 13, as are also the storeroom, carpenter shop, and machine shops. Another small building (No. 17) is occupied by equipment for testing explosives and mine-rescue work.

During the year one-half of the first floor of building No. 21, which the Quartermaster's Department continued to occupy for storage, was turned over to the Bureau of Mines and was divided into various rooms, provided with heat, light, and plumbing, for occupancy in part as offices, but largely as a library, chemical laboratories, and instrument-making shops.

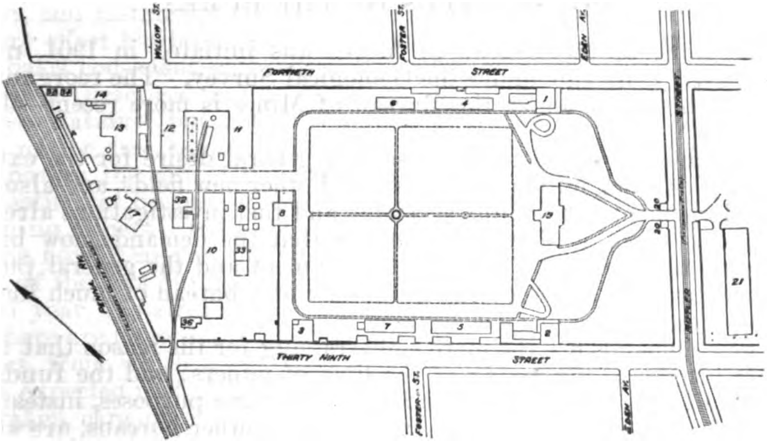

FIGURE 1.—General plan of grounds and buildings. Pittsburgh experiment station.

9, General offices; 10, electrical tests; 13, fuel engineering tests; 17, explosives, helmet, and safety-lamp tests; A, gas and coal-dust gallery No. 1; B, gas and coal-dust gallery No. 2; 21, chemical and physical laboratories.

## ORGANIZATION.

The act creating the Bureau of Mines became effective July 1, 1910. Under section 4 of this act employees of the technologic branch of the United States Geological Survey who had been associated with the investigations of fuels and of mine explosions were transferred to the Bureau of Mines. An executive order of that date made provision for the organization of the various investigations by designating the Director of the United States Geological Survey as Acting Director of the Bureau of Mines, pending the appointment of a director. The present chief clerk and administrative assistant, Van. H. Manning, was appointed July 20, and on September 3, 1910, Joseph A. Holmes, who was previously in charge of the technologic branch of the Geological Survey, was appointed director.

On October 1, 1910, H. M. Wilson was designated engineer in charge of the Pittsburgh experiment station, with authority to supervise the technologic inquiries and investigations under way at that station; and in March, 1911, F. E. McCalip was appointed special disbursing agent for duty at Pittsburgh.

The investigations carried on by the Bureau of Mines under the terms of the organic act are separated into three groups, as follows: Mine-accidents investigations, fuel investigations, and other technologic investigations. For convenience of administration, all the work relating to mine accidents and mining technology was organized as the mine-accidents division of the bureau, and that relating to fuels was organized as the fuel division.

## URGENT NEEDS OF THE BUREAU.

The work of the Bureau of Mines was initiated in 1904, more than seven years ago, under the Geological Survey. The reorganization of this work under the Bureau of Mines is more recent—July 1, 1910.

The bureau was created because of a general desire for the extension of this work into metal mining and other new fields, and also for the enlargement of the mine-accidents and fuel investigations already under way; this is shown by the fact that the demands now being made on the bureau by both the Government and the general public are such as might be expected in the case of a bureau of much longer activity and larger income.

These demands are the more embarrassing for the reason that they relate largely to the saving of the lives of miners; and the funds at the disposal of the new bureau for investigative purposes, instead of increasing, in accord with the experience of other bureaus, are actually less to-day than they were for the technologic work under the Geological Survey three years ago. As a result, in the educational work—the mine-rescue and first-aid demonstrations—the funds at the disposal of the bureau would not have been sufficient for continuous operation of the seven mine-safety cars and the cars would have been necessarily placed on their sidings for two months each and their work discontinued for this period but for the lateness in the season (November) when their work was inaugurated. Meanwhile, in the effort to keep this safety work advancing, there has been a curtailment of other technologic investigations already under way.

## MORE ADEQUATE BUILDINGS, GROUNDS, AND EQUIPMENT.

The buildings in Pittsburgh now occupied as offices and laboratories by the engineers and chemists of the Bureau of Mines are inadequate and unsuitable for these uses. They were constructed for arsenal and warehouse purposes more than half a century ago; and the space available is only a small part of that needed now for the work of the bureau. Furthermore, even these inadequate buildings and the grounds in which they stand are occupied by the permission of the War Department, and that department has asked that the buildings be vacated by the Bureau of Mines in order that they may be used again by the War Department for its own purposes. Other and more adequate provision for the work of the bureau in both grounds and buildings should be made in order that the important investigations already authorized can be conducted under conditions such as will permit efficient work and conclusive results.

For much of the work of the bureau the equipment now in use is as inadequate as are the buildings and grounds. This is true both as to the fuel investigations inaugurated in 1904, for which new equipment is now essential; and to the mine-accidents division in which from lack of adequate equipment the mine-rescue work is curtailed and from the lack of any suitable equipment important phases of it can not be satisfactorily undertaken.

## MINE-RESCUE AND FIRST-AID WORK.

There is need of sufficient funds for the continuous operation of the seven mine-safety cars now in service, and for the purchase, equipment, and maintenance in continuous service of two additional cars. Every effort has been made to operate the cars on the most economical basis consistent with efficient service, and the strictest economy has been practiced in the care and maintenance of the six mine-rescue stations; but notwithstanding this fact, and the additional fact of the free transport of these mine-safety cars by the railway companies, the cost of their maintenance and operation has exceeded the estimates because of the unexpectedly high cost of the work of training miners. It has been possible to operate the cars to the end of the fiscal year now under discussion for the reason that the operation of the cars did not begin until October and November, when the fiscal year was already well advanced.

There are more than 700,000 coal miners, connected with some 15,000 mines, from which 500,000,000 tons of coal is now produced yearly. It is expected that ultimately the mine-rescue and first-aid work will be taken care of locally through the training and organization of miners at each of the larger mines or groups of mines in the different coal fields, and that this work will then be supported entirely by the coal-mining companies. The work undertaken by the Bureau of Mines is pioneer educational work, temporary in character. It has for its chief purpose the training of a sufficient number of miners in different parts of the country in first-aid, mine-rescue, and fire-fighting methods, so that they may be easily organized into local groups, or corps, so distributed as to be easily accessible to all of the larger mines. During the year more than 50,000 miners have attended the lectures and demonstrations given from these mine-safety cars, and nearly a thousand miners received full training, sufficient to enable them to participate in active mine-rescue work. Using the experience of the year now under consideration (1911) as a basis, it is easy to determine that the appropriation available for 1912 would not be sufficient for the maintenance of the available rescue cars and stations during more than nine months of the year. For this reason it was recommended that the appropriation for mine accidents and technologic work be increased from $310,000 to $360,000 for the year 1913.

## THE INVESTIGATIONS OF MINE ACCIDENTS SHOULD BE EXTENDED.

Thus far the coal-mine accidents investigations have had to do largely with the causes and prevention of coal-mine explosions, and they have made decided progress along these lines. Yet one-half of the fatalities in coal mines result from falls of roof, falls of coal, and accidents connected with the hauling and hoisting of coal. From these combined causes more than 1,500 men are killed yearly in the coal mines of this country, and yet the Bureau of Mines has not had sufficient funds at its disposal to render possible any careful investigations concerning the specific causes of, and methods of preventing, mine accidents from these sources.

Furthermore, the mine-accidents investigations should be extended to include the metal-mining, quarrying, and metallurgical industries. The inquiries of the bureau should be made to include more complete and reliable data concerning the character and number of accidents, as well as the methods of prevention, in all branches of the mining industry, including both coal mining and metal mining, and in metallurgical and miscellaneous mineral industries.

The following table shows the number of fatal accidents in the United States for each 1,000 men employed as compared with the number of fatal accidents occurring in the coal mines of other countries:

*Number of men killed each year per 1,000 employed in coal mines of various countries.*

| Country. | Year. | | | | |
|---|---|---|---|---|---|
| | 1906 | 1907 | 1908 | 1909 | 1910 |
| United States | 3.29 | 4.70 | 3.69 | 3.83 | 3.91 |
| England | 1.29 | 1.31 | 1.32 | 1.43 | 1.70 |
| Austria[a] | 1.03 | 1.07 | .86 | 1.07 | (b) |
| Prussia[a] | 1.97 | 2.40 | 2.71 | 2.04 | 1.98 |
| France | 7.17 | 1.10 | .95 | 1.17 | (b) |
| Belgium | .95 | 1.03 | 1.07 | .95 | .95 |

[a] Does no include lignite mines.

[b] Data not available.

United States figures are subject to slight change owing to following causes: Oklahoma returns are according to fiscal years. Complete data for Maryland for 1907 and 1908, and for Wyoming for 1907, have not been obtained.

The records, so far as available, show that the death rate in the metal mines of this country averages more than three out of each thousand men employed, or, in other words, this rate is nearly as high as that in the coal mines.

The death rate in the quarries of the country is also much larger than it should be, and is far larger than that in the quarries of other countries.

The inquiries and investigations of the bureau should be extended to include also those relating to health and safety conditions in and about mines. An arrangement has been made with the Public Health and Marine-Hospital Service by which one or more surgeons connected with that service will carry on jointly for that service and for the Bureau of Mines investigations looking to the improvement of mine conditions. These inquiries and investigations have already shown the prevalence of tuberculosis and hookworm as miners' diseases in a number of different localities in the United States. It is important that this work should be extended more rapidly, because of the fact that the health conditions, as well as the risk of accidents, may be influenced by conditions susceptible of easy improvement. Furthermore, the large and continuous influx of foreigners into the mining regions of the United States will bring to an increasing extent the hookworm and other diseases that abound in mines in parts of certain European countries.

Various questions that concern the health of workers in mines, quarries, and metallurgical plants can not be answered finally without investigations and inquiries that are national in scope. Among such questions are the most efficient methods of preventing the diseases peculiar to certain industries, the most effective sanitary precautions to be observed in and about coal mines and metal mines, and the relative healthfulness of occupations pertaining to mining and metallurgical industries. The investigations and inquiries that are essential to the gathering of reliable information on these questions can be undertaken by the Bureau of Mines, in connection with its collection of accident statistics, in a prompt and efficient manner and at minimum expense.

### THE NEED OF MORE RELIABLE AND MORE COMPLETE STATISTICS OF ACCIDENTS.

Statistical information concerning the mine accidents, more especially accidents in metal mines, in the United States has been in the past far from complete. In many States no such statistics are collected.

The funds at the disposal of the Bureau of Mines during the past year have not been sufficient to enable it to carry out any definite plans for more extensive and rapid collection of statistics of accidents at metal mines, but it is hoped that during another year the bureau may be able to bring together and publish promptly full and reliable data concerning accidents in mines, quarries, and metallurgical plants. Such statistics are essential to the development of intelligent and workable plans for greater safety in all mineral industries.

### THE NEED OF INVESTIGATIONS LOOKING TO THE PREVENTION OF MINERAL WASTE.

The enlargement of the inquiries and investigations of the bureau relative to increasing efficiency and lessening waste in the mining, quarrying, metallurgical, and miscellaneous mineral industries of the country is urgently needed. With an annual loss of 200,000,000 tons of soft coal, 80,000,000 tons of anthracite, and 480,000,000,000 cubic feet of natural gas, besides large losses in the mining and treatment of other mineral substances, no one familiar with these industries can fail to realize the need for such investigations, nor the fact that investigations concerning the loss of life and waste of resources—safety and efficiency—must go hand in hand because of their intimate relations. The Nation has only one supply of mineral resources. It is the duty of both the State and the Nation to see that these resources are used efficiently—that is, without unnecessary waste—and yet, in many cases, the temporary profits, as well as the personal, are increased by the practice of highly wasteful methods. What the Bureau of Mines can do is to procure the facts, find out the possible improvements, and state them clearly to the public for such action as may be deemed practicable.

## ENLARGEMENT OF FUEL INVESTIGATIONS.

There is serious need of enlarging the fuel investigations. The demands from the various branches of the Government service in connection with the purchase of coal and oil by the Government and the efficient use of these fuels have been too great for the bureau to meet. The work required, and its financial importance to the Government, is nearly three times now what it was three years ago when the appropriation for it was fixed at about $100,000.

Over 8,000 samples of coal, lignite, and fuel oil, intended for the use of the Government, were analyzed by the bureau in the past fiscal year. These samples represented 1,091,400 tons of coal, valued at approximately $3,084,800, whereas in the fiscal year ended June 30, 1909, only 3,299 samples, representing 611,362 tons, valued at $1,858,750, were examined. During the fiscal year ending June 30, 1912, the bureau will be called on to analyze samples representing 1,524,400 tons of coal, valued at $4,809,200.

The various inquiries pertaining to the fuels belonging to the Government need to be enlarged to include more extended study of the characteristics of crude petroleums and fuel oils and their suitability for use under steam boilers or in internal-combustion engines. The studies of the characteristics of the different coals and lignites likewise need to be carried on more actively than has been possible with the appropriations made for the work.

Some inquiries that could not be followed out as they deserve to be are: The practicability of increasing the fuel value of lignites and low-grade coals by briquetting, the suitability of different coals for the manufacture of coke, the processes by which the highest yield of coke and by-products can be obtained from these coals, the relative value of the cokes for different metallurgical purposes, the steaming power of coals and lignites from different fields, and the possibility of utilizing the same coals and lignites to greater advantage in gas producers.

Some of the equipment on hand for fuel investigations is now out of date, having been obtained in 1904. There is, therefore, need of much new equipment and the resetting of the boilers, producers, etc. Since 1908 little new equipment has been purchased for this work.

## THE NEED OF EXTENDING THE MINE-ACCIDENTS WORK TO THE METAL-MINING INDUSTRIES OF THE WESTERN STATES.

The work transferred from the United States Geological Survey to the Bureau of Mines related almost entirely to the mining and utilization of coal and the accidents connected therewith. The appropriations given to the Bureau of Mines for its work during the first year following its establishment were so worded as to be necessarily applicable to coal-mining inquiries. Therefore it has not been possible as yet to extend the investigations of the bureau with a view to their aiding in the upbuilding of the metal-mining industries. Meanwhile, however, the ratio of accidents to the number of men employed has been in many cases as large or larger in the metal mines of the country than it has been in many of the coal mines. The need for the extension of the mine-accident work into the metal-mining field is a serious one.

However, the loss of life in connection with metallurgical operations in different parts of the country is worthy of serious consideration. A limited inquiry indicated that 11 deaths have been caused from poisonous gases at a single metallurgical plant during one year. The serious need of inquiries and investigations looking to the improvement of such conditions has become more and more apparent as inquiries have been made in connection with a number of the larger plants.

Furthermore, during the past several years the mining industries in the Western States have fallen far short of the agricultural development. In some of the States there has been a retreat rather than an advance in mining development. It is believed that thorough inquiries and investigations concerning the metal-mining conditions in the Western States would do much toward improving the safety and health conditions, as well as toward generally advancing and upbuilding these industries.

## SCOPE OF THE FIRST YEAR'S WORK.

The investigation into the causes of mine explosions and the analyzing and testing of mineral fuels which from 1908 and 1904, respectively, had been conducted under the Geological Survey were, on July 1, 1910, transferred to the Bureau of Mines, then created, without any increases in the appropriations for such work. There was added another appropriation of $160,000, and it was understood that all or the larger part of this adition would be used for the development and maintenance of mine-rescue work in the United States.

In establishing the Bureau of Mines it is evident, therefore, that the scope of the work to be done was greatly extended by Congress, but that the appropriations for this work were made in such form and under such conditions as have much restricted the scope of the work itself. Consequently the bureau has not been able to enter on new fields, as it has been urged to do from many sources. The scope of its work has been limited largely to the subjects transferred to it from the Geological Survey. It is hoped that future appropriations will permit the extension of this work to include a number of technologic investigations pertinent to different branches of the mining, metallurgical, and quarrying industries.

## FINANCIAL STATEMENT.

A condensed statement of the financial operations of the bureau for the fiscal year ended June 30, 1911, is presented in the following table:

*Amounts appropriated for and expended by the Bureau of Mines for the fiscal year ended June 30, 1911.*

| Title of appropriation. | Amount. | Repayments. | Available. | Disbursements. | Clear balance. |
|---|---|---|---|---|---|
| General expenses:<br>Administrative expenses...... $54,000<br>Moving and equipping laboratories...... 14,700<br>Office rent and furnishings.... 10,000 | $78,700.00 | ............ | $78,700.00 | $78,219.00 | $481.00 |
| Investigating mine accidents.............. | 310,000.00 | $5,411.18 | 315,411.18 | 314,997.72 | 413.46 |
| Testing fuels.............................. | 100,000.00 | 917.11 | 100,917.11 | 100,726.29 | 190.82 |
| Making public reports...................... | 5,000.00 | ............ | 5,000.00 | 4,366.58 | 633.42 |
| Inspecting mines in the territories......... | 8,500.00 | ............ | 8,500.00 | 3,246.20 | 5,253.80 |
| Total.............................. | 502,200.00 | 6,328.29 | 508,528.29 | 501,555.79 | 6,972.50 |

## FUEL INVESTIGATIONS.

The primary aim of the fuel-testing investigations under the Geological Survey was the more efficient use by the Government of fuels purchased under its supervision; subsequently the questions of waste in the mining and handling of fuels belonging to the Government and the more appropriate use of each fuel for any particular purpose were placed in the investigations, with a view to ascertaining how waste in mining and storage might be reduced and economy and efficiency in use might be increased. By the terms of the acts making appropriations for the work the fuel investigations conducted by the technologic branch of the Geological Survey during the year immediately preceding the creation of the Bureau of Mines were limited to the analyzing and testing of fuels belonging to or for the use of the United States. In consequence of this limitation the fuel investigations transferred to the Bureau of Mines and the various technologic researches and the routine work relating to the examination of fuels under this bureau embody two general lines of inquiry, as follows:

1. The inspection and analysis of coals, lignite, and other mineral fuels purchased under specifications for the use of the Government, to ascertain whether or not these fuels conform to the stipulations of the contract under which they are purchased; also, the ascertaining of the most efficient equipment and method of using these fuels.
2. The investigation of coals, lignite, and other mineral fuels belonging to the Government.

### ANALYZING AND TESTING OF FUELS FOR THE USE OF THE UNITED STATES.

A large part of the coal used by the Government for its power plants, public buildings, and naval stations is purchased under contracts that specify the ash and moisture content and the heating value of the coal. The price paid the contractors who supply the coal thus purchased is determined by the analysis of samples taken from deliveries made under each contract. The collection of the samples is done by or under instructions from the Bureau of Mines, and the analysis and testing of these samples is an important part of the work of the bureau in determining whether the quality of the coal is up to the fixed standard, and if it is not, in fixng the reduction in price to be paid in proportion to the lower value of the coal.

The samples are collected wherever coal purchased under contract is being delivered to the Government. They represent deliveries made at public buildings in the District of Columbia, or at public buildings, naval stations, and Army posts in many parts of the United States, and also the deliveries made at the great coal-shipping ports, as New York and Norfolk, where coal is being delivered for the use of the Navy or of the Panama Railway Co.

In the fiscal year 1910–11 the purchases of coal by the Government under specifications providing for payment according to the quality of coal delivered amounted to approximately 1,091,400 tons, costing $3,084,800, notwithstanding the fact that the general plan is to apply this method of purchasing coal only to contracts of such size as warrant sampling, analysis, and heating-value tests.

The specifications applying to the purchase of coal for use on the battleships and naval vessels are somewhat different. The mines from which it is proposed to procure coal are visited, samples are taken in the mines, and these samples are analyzed. In making contracts the coal from a mine or mines is specified. On delivery the coal is sampled and tested. These tests show whether the contractor has shipped coal from the specified mine or mines. If the samples of coal as delivered indicate coal inferior in quality to that expected, shipments from the mines specified are no longer accepted. Coal purchased under specifications of this nature and used on naval vessels amounted in round numbers to 750,000 tons during the fiscal year 1910–11.

In the collection of samples a definite scheme of procedure is followed. The number of samples taken from any given delivery of coal is dependent on the size of that delivery, and every practicable precaution is observed to insure that the samples fairly represent the coal delivered. The gross samples taken are reduced by crushing, mixing, and quartering to samples that weigh about 2 pounds. These are sealed in air-tight containers and are sent by mail to the laboratory of the Bureau of Mines in Washington.

Most of the samples analyzed and tested for heating values at the Washington laboratory represent coal purchased under specifications that provide for payment according to the quality of the delivered coal. Analyses of mine samples are generally made in the bureau's laboratory at Pittsburgh. The methods used in the bureau's laboratories are substantially those that were adopted at the Government fuel-testing plant at St. Louis in 1904, with such modifications and changes as experience has shown advisable, and are believed to embody the essential details of the methods generally recognized as best. During the fiscal year ended June 30, 1911, 8,230 samples were received and analyzed by the 10 chemists in the Washington laboratory.

To determine the award of a particular contract or to advise other bureaus and departments of the Government how a particular coal can be utilized to best advantage, or to ascertain what kind of coal can be burned most efficiently in a particular type of furnace, it is necessary for the bureau to occasionally conduct or cooperate in steaming tests of coals. These tests are conducted at the Pittsburgh experiment station, at Government power plants, or on board Government ships on which it is proposed to use such coal.

### ANALYZING AND TESTING OF FUELS BELONGING TO THE UNITED STATES.

The general purpose of the analyses and tests of coal at Pittsburgh is to indicate the character of the coals and other mineral fuels belonging to the Government of the United States and the manner in which these different fuels can be developed and utilized to the best advantage and with least waste. In all cases in which such practice is possible, the samples for examination, as respecting beds of coal belonging to the United States, are collected from beds in the public lands. When this is not practicable, they may be collected from adjacent lands, so situated that the coal and other fuels to be found therein are similar to those occurring in the public lands; and because the adjacent lands, and not the lands owned by the Government, are in process of development the samples from these adjacent lands can be collected much more easily and cheaply.

#### COLLECTION OF SAMPLES.

The samples collected are of two kinds, mine samples, which, after crushing and quartering down, weigh 2 to 3 pounds, that are taken to show the character and the commercial possibilities of the bed of coal or lignite sampled; and larger samples of several tons or a carload each, taken to determine the suitability for particular uses, and the behavior of such fuel under actual furnace conditions.

In the collection of these samples, the geologists of the United States Geological Survey, this organization being charged with the classification of the coals in the public lands, cooperate with the engineers of the Bureau of Mines, who are studying the relative fuel values of the different coals. The mine samples of coal are taken from clean, fresh faces of the bed of coal as exposed in mines, country banks, or outcrops. They are taken according to a definite and exact plan that was devised at the beginning of the fuel-testing investigations under the Geological Survey in 1904 and has been developed with the progress of the investigations. A detailed description of this plan has been published by the Bureau of Mines as Technical Paper 1. The utmost care is observed in the selection of the samples collected and in the preparation and shipment of the samples, in order to insure these samples being fairly representative of the commercial fuel that would be shipped from the particular bed at the point of sampling.

Samples of mineral fuels other than coal or lignite, such as oil and natural gas, are collected in the field from wells or pipe lines by representatives of the Bureau of Mines or of the Geological Survey and are sent in hermetically sealed containers, as are the samples of coal and lignite, to the experiment station at Pittsburgh, Pa., for examination, analysis, and tests.

### ANALYSIS OF SAMPLES.

In the chemical analysis of the samples of coal and lignite and other mineral fuels at the Pittsburgh station, the procedure followed is essentially the same as that of the Washington laboratory except that the work at Pittsburgh includes the ultimate as well as the proximate analyses. Great pains are taken to maintain uniform conditions during the various stages of an analysis and all results are carefully checked. In case any discrepancies appear, duplicate analyses are made. In general the methods of analysis followed are those adopted by the American Chemical Society, modified as experience demonstrated such modifications advisable. Every effort is made to simplify and cheapen these methods not only in the interest of economy in the chemical work of the Government, but also with a view to the development of inexpensive and efficient methods available for use in commercial laboratories. During the fiscal year 1911 about 10,000 samples of coal and lignite, 110 samples of fuel oil, and 50 samples of natural gas were analyzed by the seven chemists in the Pittsburgh station laboratory.

### TESTING OF SAMPLES.

The testing of the samples of coal under furnace conditions is for the purpose of determining more accurately than can often be done by chemical analysis how the bed of fuel represented by the samples can be utilized with greatest efficiency in different types of furnaces. In connection with the tests a variety of physical and chemical investigations are carried on to obtain information supplementing that obtainable from the furnace experience. The general plan of the tests and the supplemental investigations as now ordinarily conducted include the following work:

The testing of a portion of each coal received to determine the most efficient and least wasteful method of burning the fuel in furnaces of the type used for heating the Government buildings, Army posts, naval stations, or Government ships, in which it may be proposed to use such coal.

The testing of other portions of the same shipment of coal from Government lands in the gas producer, for continuous runs during periods varying from a few days to several weeks, in order to ascertain the suitability of the fuel for use in such producers and the best methods of handling it, and thus to determine the conditions requisite for obtaining the largest yield of high-grade gas suitable for power and heating purposes.

The testing of another portion of the same coal in a briquet machine at different pressures and with different kinds of binder, in order to determine the feasibility of briquetting the coal when slacked or finely divided, and the making of steaming or gas-producing tests with these briquets, to determine the conditions under which they can be utilized most advantageously; demonstrations, on a commercial scale, of the possibility of producing briquets from

American lignites, and the value of the briquets as fuel in comparison with the run-of-mine lignite from which the briquets were made; the finding of cheaper binders for use in briquetting friable coals not suited for coking purposes.

Investigations into the distribution, chemical composition, and calorific value of the peat deposits available in those portions of the United States where coal is not found, and the preparation of such peat by drying or briquetting, in order to render it useful as a local substitute for coal.

Investigations into the character of the various petroleums found throughout the United States, with a view to determining their calorific value, chemical composition, and the various methods whereby they may be made most economically available for efficient use as power producers for the Government, especially on board ships, through the various methods of combustion.

Investigations and tests into the relative efficiency as power producers in internal-combustion engines of the heavier distillates of petroleum, as well as of kerosene and gasoline, in order to ascertain the commercial value and relative efficiency of each product in various types of engines available for use in naval vessels.

Investigative studies into the processes of combustion within boiler furnaces and gas producers to ascertain the temperatures at which complete combustion of the gases takes place, and the means whereby such temperatures may be produced and maintained, thus diminishing the loss of value up the smokestack and the amount of smoke produced. At each stage of the process of testing, samples of the coal are forwarded to the chemical laboratory for analyses; combustion temperatures are measured; and samples of gas are collected from various parts of the combustion chambers of the gas producers and boiler furnaces and are analyzed in order that a study of these data may throw such light on the processes of combustion and indicate such necessary changes in the apparatus as may result in larger economies in the use of the coal.

Investigations and tests into the possibilities of coking those coals on Government lands that have hitherto been classed as noncoking, and the making of coking tests of these different coals with a view to improving the coking quality of such coals through the mixing of different coals of the coking and noncoking type after they have been pulverized.

Another line of investigation concerns the methods of mining and of preparing coal for market. It is well known that under present methods of mining from 10 to 65 per cent of any given deposit of coal is left underground as pillars and supports, or as low-grade material, or in beds broken up because of mining a lower bed first. On an average 50 per cent of the coal is thus wasted or rendered valueless, as it can not be removed subsequently because of the caving of the roofs of abandoned galleries and the consequent breaking up of overlying coal beds.

The investigations into waste in mining and the testing of refuse, bone, and slack coal in gas producers, as briquets, etc., have for their purpose the demonstration of how these materials, now wasted, may be used profitably.

In connection with all these lines of fuel testing, certain research work, both chemical and physical, is carried on to determine the true composition and properties of the different varieties of coal and the chemical and physical processes of combustion, the purpose of these investigations being to determine how each coal can be burned most efficiently. Experiments are conducted that relate to the destructive distillation of fuels; the by-products of coking; the spontaneous combustion of coal, with especial reference to fire risks in storing coal on board ships, in closed bins, or on wooden wharfs; the storage of coal and the loss in fuel value in various methods of storing—that is, exposed to the open weather in piles, in closed bins, or under water, as at certain naval stations; and to kindred questions, such as the weathering of coal. The different coals stored under different conditions are tested from time to time by both chemical analyses and furnace trials; and this work is supplemented by equally careful observations in the field. Valuable results have already been obtained.

## MINE-ACCIDENTS INVESTIGATIONS.

### SCOPE.

The mine-accidents investigations carried on by the Geological Survey prior to the organization of the Bureau of Mines (July 1, 1910) related mainly to the causes and prevention of mine explosions. This work was developed especially along the following lines:

Investigations in the mines to determine the conditions leading to mine disasters, the presence and the relative explosibility of mine gas and coal dust, the causes of mine fires, and the means of preventing or limiting explosions and fires.

Tests to determine the relative safety of the various explosives used in coal mining, when fired in the presence of explosible mixtures of mine gases and air, or coal dust and air, or coal dust, gas, and air.

Tests and investigations to determine the conditions by which the dangers attending the use of electricity in mines may be efficiently met and economically remedied.

Tests to determine the safety of various types of mine lights in the presence of inflammable gas and the accuracy of these lights for detecting small percentages of such gas.

Tests of the various types of breathing apparatus such as engineers and miners must use in examining mines immediately following a mine explosion or in rescuing entombed miners in mines containing poisonous gases.

The first four of these lines of investigation have to do with preventive measures, and are those on which ultimately the greatest dependence must be placed. The fifth has to do in part with prevention but also with the saving of life after a mine disaster, by the rescue of entombed miners who may have escaped the violence of the explosion, but would be overcome by the poisonous gases if not rescued. Experience shows that 10 per cent of the victims in certain disasters and as high as 80 per cent in others have died from the poisonous gases resulting from an explosion.

Under the Bureau of Mines, this work has rapidly undergone extension and reorganization with a view to more efficient development in coal-mining regions, and the extension of similar investigations into metal-mining and quarrying operations and into the metallurgical industries, whenever Congress may make suitable provision for it. The percentage of fatal accidents in metal mines in the United States is only little less than that in coal mines, and this is in spite of the fact that in the metal mines there are no general explosions of gas or dust. The health conditions in many metal mines and metallurgical plants are worse than those in coal mines.

Unfortunately, the bureau has been able to do little as yet outside of the investigation of fuels and of coal-mine accidents. The appropriations made for the conduct of the technologic investigations of the bureau for the fiscal year 1911 were less than were received in prior years by the technologic branch of the Geological Survey. Therefore it has been impracticable to extend the investigations into the broader fields of accidents in metal mining and metallurgy or in quarrying operations, notwithstanding urgent requests that this be done, further than to outline an organization and to determine the lines along which such investigations may be properly directed.

### INFLAMMABLE MINE GASES AND COAL DUST.

In the investigation of mine gases decided progress has been made. The conditions under which inflammable gas occurs in the northern anthracite field of Pennsylvania have been studied with the intent of discovering the laws governing the occurrences of such gas and of finding a means of anticipating outbursts of gas in mines. A large number of coal miners are killed or injured every year by explosions in which inflammable gas is an agent; and it is believed that the conclusions derived from the study of conditions in the field selected will prove of value in showing how to lessen the danger to miners in that and other fields in which such gas occurs. A similar study is to be undertaken in a few typical bituminous-coal fields where gas is found in dangerous quantities.

The mining engineers of the bureau have investigated coal mines in many parts of the United States in the endeavor to determine the causes of mine explosions and mine fires and the means by which dangerous conditions may be most effectively abated. The investigations made included the use of different illuminants and explosives in mines, the inflammability of the dusts or gases found in the workings, the dangers attending the use of electricity, and so forth.

### ELECTRICITY IN MINING.

As part of its mine-accidents investigations, the bureau is studying the problem of safeguarding life and property from the dangers that attend the use of electricity underground. One of its inquiries has to do with the removing of a possible cause of mine explosions through the use of explosion-proof motors—that is, motors with covers for those parts that emit sparks. Another investigation has to do with the determination of the most efficient and safest types of insulation for use about mines and metallurgical plants in order to protect miners and other employees from shock. Still another line of investigation relates to the possibility of igniting explosive gases through the breaking of incandescent electric lamps in the presence of such gases. Other investigations relate to the electric firing of shots and to other uses of electricity in mining operations.

The preliminary recommendations of the bureau in regard to regulations concerning the use of electricity in mines have been generally accepted by mining engineers and have been incorporated in the mining law of the largest mining State.

## EXPLOSIVES USED IN COAL MINES.

During the year a number of explosives have been thoroughly tested and have been designated as "permissible" explosives for use in dusty and gaseous mines under the conditions prescribed by the bureau. These "permissible" explosives give a short, quick, and relatively cool flame that is less likely to ignite inflammable gas or coal dust than is the flame of dynamite or that of black powder. Up to July 1, 1911, 88 explosives had passed the tests required by the bureau and had been placed on its list of permissible explosives.

In its endeavor to reduce the dangers attending the use of explosives in coal mining the bureau is meeting with the heartiest cooperation of manufacturers of explosives, who are steadily endeavoring to produce new explosives that will meet the increasingly rigid demands the bureau makes in behalf of safety. So many requests have been received for tests of these new explosives that the testing work is now nearly a year in arrears. But although the bureau is anxious to test these explosives promptly, in the belief that they may be superior to those already tested, it is unable to bring the work up to date without increasing the force of engineers and chemists engaged in making these tests, and the funds available for conducting the investigations are not sufficient to meet such increase. In testing and analyzing the explosives examined during the year nearly 10,000 tests, analyses, and determinations were made.

The chemical investigations, like the physical tests, of explosives have been carried on at the Pittsburgh station of the bureau. In addition to routine chemical analyses and tests, several improved methods of testing have been devised.

## EXPERIMENTAL MINE.

The explosibility of a mixture of coal dust and air under test conditions having been repeatedly demonstrated at the experiment station of the bureau at Pittsburgh, Pa., the Bureau of Mines is now endeavoring to determine the exact conditions under which such explosions take place in mining operations. After having failed in many efforts to find a small coal mine available for its use, the bureau obtained a tract of coal land near Bruceton, Pa., about 10 miles south of Pittsburgh, and has opened there a small experimental mine for the study of coal-dust explosions. The plan of work does not contemplate the opening up of an ordinary coal mine, but rather the driving of a double entry, or tunnel, into the coal bed for about 2,000 feet and then opening, from the entries, a few rooms in which experiments may be conducted to determine, under the conditions of actual mining, the behavior of different types of explosives, the conditions that determine the ignition of gas or dust, or mixtures of gas or dust and air, and the factors involved in the spread of the resulting explosions. The main purpose of the investigations carried on at the mine is, of course, to discover the most efficient methods of preventing such explosions. If the necessary funds can be obtained for carrying out this plan to the extent necessary for reliable results, the United States will have made an important contribution to the understanding and prevention of coal-dust explosions.

### MINE-SAFETY CARS AND STATIONS.

Early in the investigation of mine disasters it was necessary to provide, in the important coal fields, facilities for enabling engineers to examine mines after disasters, while the mines were still full of poisonous explosive gases, in order that examination might be made while the evidences of a disaster were still fresh. It was found also that such prompt examinations would be useful in opening up these mines and in rescuing miners who might have been entombed. For the above reasons, there has been established in those of the larger coal fields in which mine disasters are most likely, mine-safety stations or mine-safety cars. The first of the stations was established at Urbana, Ill., in 1908; a second at Knoxville, Tenn., in 1909; and a third at Seattle, Wash. A fourth station at McAlester, Okla., and a fifth at Birmingham, Ala., were subsequently established, these with the Pittsburgh station making six stations suitably equipped.

Seven mine-safety cars are operated by the bureau. They were purchased as second-hand cars, refitted at a cost of about $1,500 each, and equipped at a cost of about $3,500 each. These cars are distributed as follows:

*Distribution of the mine-safety cars operated by the Bureau of Mines.*

Car No. 1, in the anthracite fields, with headquarters at Wilkes-Barre, Pa.

Car No. 2, in the coal fields of New Mexico, Colorado, and Utah, with headquarters at Trinidad, Colo., and Salt Lake City, Utah.

Car No. 3, in the coal fields of western Kentucky, Indiana, and Illinois, with headquarters at Evansville, Ind.

Car No. 4, in the coal fields of Wyoming, Northern Colorado, and Utah, with headquarters at Rock Springs, Wyo.

Car No. 5, in the coal fields of Montana and Washington, with headquarters at Billings, Mont., and Seattle, Wash.

Car No. 6, in the coal fields of western Pennsylvania and northern West Virginia, with headquarters at Pittsburgh.

Car No. 7, in the coal fields of southern West Virginia, western Virginia, eastern Kentucky, and eastern Tennessee, with headquarters at Huntington, W. Va.

These cars do not remain at their headquarters, but each within its own district moves from one mining camp to another. When a serious mine disaster occurs in any district, the car in that district immediately drops its ordinary program and is carried to the scene of the disaster either by special locomotive or by the first available train. The men of the car, together with such local men as have had mine-rescue training, examine the mine as quickly as possible, penetrating the poisonous and explosive gases in it by means of the breathing apparatus that they wear, and aiding in the rescue of any persons who may have been entombed in the mine. In case of a disaster in the coal fields near one of the six stations mentioned above, the miner in charge of this station, with all available rescue and first-aid equipment, proceeds by the first train to the scene of the disaster, and endeavors to accomplish, with the help of locally trained miners, the purposes mentioned above.

The primary purpose of the cars and stations is not the rescue work that they may accomplish, but the investigation of mine disasters. The incidental purposes are the development of more efficient mine-safety and first-aid equipment and methods, and the training of local miners at each of the mining camps visited, so that in case of mine accidents of any kind there will be at each mine men ready and equipped to render immediate and valuable assistance. To carry out these purposes the mining engineers of the bureau examine the safety conditions at mines, advise the mine officials as to the possibilities of improving these conditions, and deliver illustrated lectures to miners, calling their attention to the need of greater care in safeguarding their own lives and the lives of others. Daily demonstrations of mine-rescue and first-aid equipment and methods are given. Miners are trained in the practical methods of handling such equipment under mine-disaster conditions.

As illustrating the extent and importance of this work, attention may be called to the fact that there are more than 700,000 coal miners in the United States. A large majority of these are not from English-speaking countries and have come to this country unfamiliar with mining operations. The fact that more than 100,000 miners attended the lectures and demonstrations, and over 7,000 have received training in mine-rescue and first-aid work in less than one year, illustrates the progress toward safer mining. Permanent results are appearing in the establishment of a considerable number of local rescue and first-aid stations equipped by mining companies and manned by experienced local mining engineers competent to investigate mine conditions, conduct safety demonstrations, and to advise mine officials and miners as to methods for preventing mine accidents.

### MINE-SAFETY LAWS AND REGULATIONS.

With a view to being able to point out the laws and regulations best adapted to prevent accidents in American mining, quarrying, and metallurgical industries, the bureau is bringing together the laws, rules, and regulations found to be now in force in other important mining countries. This work is now well under way. Copies not only of mining laws, but also of local and even of private mining rules and regulations, are being collected from different mining countries. As they are received they are carefully examined with a view to determining what provisions may be best adapted to diminishing mine accidents in the United States. This work involves a study not only of the laws as they exist in different countries, but of the important court decisions giving the proper interpretation of these laws and regulations.

## PROGRESS OF INVESTIGATIONS.

### FUEL INVESTIGATIONS.

### INSPECTION OF GOVERNMENT FUEL PURCHASES.

The fuel-inspection division, with office and laboratory in Washington in the building occupied by the Bureau of Mines, is charged with collecting, analyzing, and testing samples of coal that represent deliveries under Government contracts providing for purchase on the specification basis. On such contracts the bidders guarantee the quality of the coal they offer in terms of ash, "dry coal," and British thermal units "as received," and the quality guaranteed by the successful bidder becomes the standard of his contract. The price paid the contractor is governed by the analysis of the coal he delivers.

The General Supply Committee (which issues specifications and proposals for the purchase of coal for the Federal buildings in the District of Columbia), the Quartermaster's Department of the Army, the navy yards and stations of the Navy Department, the Panama Railroad Co., the Isthmian Canal Commission, and other branches and institutions of the Federal service asked the Bureau of Mines for recommendations on the award of contracts.

To determine the award of a contract, particularly in the District of Columbia, it is frequently necessary for the Bureau of Mines to conduct a test in one or another of the Government power plants. It is also necessary in some cases for engineers of the bureau to visit the coal mines that are to supply the coal offered by the bidders and to take samples of coal for analysis and to collect information relating to the capacity of certain mines, or their ability to deliver to the Government coal shipments in accordance with the contract under consideration.

The engineers engaged in coal inspection sometimes have to visit Government power or heating plants, and give technical advice on the proper methods of burning a particular coal available at lowest cost at that point. For instance, during the year one of the engineers made a trip to Panama on a ship of the Panama Railroad Co., in order to ascertain the cause of reported difficulties in burning the coal in the ships' furnaces, and to discover remedies for the difficulties found to exist.

Something of the importance of this coal inspection and of the labor involved in it is indicated by the following figures:

During the year 8,230 samples of coal for analysis were received, representing 1,091,400 tons of coal, costing approximately $3,085,000, purchased for the Government under specifications. In the fiscal year 1909–10, 829,289 tons was purchased, costing approximately $2,287,000; and during the fiscal year 1911–12, probably 1,524,400 tons, costing approximately $4,809,000, will be bought by the Government on a specifications basis. These figures indicate the growth of the inspection work based on the wider adoption by the Government of the specification method of purchasing its fuel supplies. In addition to this, there are other purchases of coal by the Government based on the general preliminary investigations by the bureau, but not on specifications nor on exact delivery approvals, which now aggregate nearly $4,000,000 yearly. During the fiscal year 1910–11, the laboratory made 19,411 moisture, 10,299 ash, 9,259 sulphur, 7,634 volatile-matter, and 9,964 calorimeter determinations; in all, 56,567 determinations.

The steaming tests that have been conducted and the advice given by the engineers of this section are resulting in economies to the Government. For instance, by a change in the kind of coal used one Government boiler plant is spending between $4,000 and $5,000 a year less than formerly for fuel; and another Government plant reduced its annual expense for fuel over $8,000. Other equally striking examples might be mentioned.

The specification method of purchase protects the Government against the delivery of poorer coal than that guaranteed by the contractor, and incites dealers to prepare the coal more carefully. When inferior coal is delivered, that is, coal below the contract standard, the contractors are penalized. In one instance, the analysis of samples by the bureau indicated the quality of the coal to be so far below the specified standard, that the resulting deductions in price amounted to about $25,000 in the settlements on the contract for a single year. Other instances might be cited.

The fuel-inspection division is divided into two sections, a coal-sampling section and a laboratory section. The former supervises or assists in the sampling of all coal delivered to the Federal buildings in the District of Columbia, and gives directions concerning the sampling of coal delivered to Federal institutions outside of the District. The chemists of the laboratory analyze all samples received from the inspecting engineers, or from the custodians of Federal buildings in other parts of the country, and determine the heating value of the samples.

The fuel inspection is in local charge of G. S. Pope, engineer; P. M. Riefkin, and other assistant engineers who collect samples and make the field inspections; one clerk and two skilled laborers. The chemical analyses of these samples are made in the Washington laboratory by J. D. Davis, assistant chemist, aided by H. M. Cooper with two additional assistant chemists, seven junior chemists, one laboratory aid, one helper, and one laborer.

In addition to the engineers employed in the inspection and sampling of the coal purchased by the Government in the District of Columbia, one assistant engineer is stationed in New York and another in Norfolk for the sampling and inspection of coals shipped from those points for the Isthmian Canal Commission and the railway and steamships of the Panama Railroad Co.

A report setting forth the results of the purchase of coal on the specification basis by the Government during the fiscal year 1910 was prepared for publication.

## STEAMING TESTS.

The work of this section during the year included special fuel-efficiency tests of coals offered for the Quartermaster General under the War Department, and for other branches of the Government service, all of which were made at the Pittsburgh station. Special steaming tests were made for the superintendent of the State, War, and Navy Building in the District of Columbia. In all there were made during the year 118 of these fuel-efficiency tests involving 72,180 separate observations. These tests were conducted by S. B. Flagg, engineer, assisted by A. A. Straub, assistant engineer, F. E. Woodman, assistant engineer, L. L. Satler and W. H. Pfeil, junior chemists.

S. B. Flagg, engineer, cooperated with G. S. Pope, engineer, in some special coal-sampling investigations in handling Government coals at Norfolk, Va.; Mr. Flagg also participated in a series of comparative tests of eastern and western coals, made by the Navy Department, on two armored cruisers of the Pacific Fleet.

Considerable time was given to the revision of two reports on the smokeless combustion of coal. A report on the use of fuel oil on the Pacific coast was prepared for the Navy Department.

### COMBUSTION INVESTIGATIONS.

The combustion investigations were formerly carried on by Henry Kreisinger and W. T. Ray. The latter left the service before the beginning of the fiscal year. Mr. Kreisinger completed a bulletin discussing and summarizing the data obtained from the steaming tests made at St. Louis and Norfolk, from September 1, 1904, to December 30, 1908, under the Geological Survey.

For special fuel-efficiency investigations there has been constructed at the Pittsburgh station a special furnace with a combustion chamber 40 feet long. By means of this furnace, the effect of variations in the rate of firing and in the air supply on the volume of the combustion space necessary for the complete or smokeless combustion of any coal may be studied, and a number of important results have already been obtained.

The following tests and analyses were made:

*Observations and gas analyses made in special fuel-efficiency investigations.*

| | |
|---|---|
| Number of tests | 30 |
| Number of observations | 7,650 |
| Number of gas analyses | 4,400 |

During the fiscal year these fuel-efficiency investigations were in charge of a committee consisting of J. C. W. Frazer, chemist, J. K. Clement, physicist, and C. E. Augustine, assistant mechanical engineer. The analyses of the gas samples from these tests were made by A. E. Hall, L. L. Satler, W. H. Pfeil, and A. M. Wedd.

### GAS-PRODUCER INVESTIGATIONS.

The current series of gas-producer investigations was undertaken with a view to the possible discovery of more efficient means of utilizing coals without smoke in various Government power plants, and especially to the possible discovery of more efficient means of generating producer gas for use as power on board Government ships.

A small experimental producer (150 horsepower) was erected for these investigations. It has been operated at high temperatures for the purpose of determining the possibility of removing the ashes from the producer in the form of a liquid slag, and of improving the quality of the gas for power uses. Coke was the principal fuel used; limestone was added in varying proportions to aid in fluxing the ash and thus making the slag more liquid. It was found that with coke and the proper proportion of limestone the ash can be made to slag readily and to flow freely. The operation of the producer at high temperatures showed also that the quality of the gas is much improved because of the greater reduction of carbon dioxide to carbon monoxide at such temperatures.

The producer has water-cooled tuyères, and the lining of that part of the producer subject to high temperature is of special brick. Back of these brick is a water-coil cooling device, which, it is believed, will aid in preventing rapid deterioration of the lining.

A report on the more important features of producer-gas power-plant development in Europe was revised for publication as Bulletin 4. A report on the relation of fuel-bed temperature to the yield of gas in gas producers and the factors governing the formation of water gas was revised for publication as Bulletin 7. A report summarizing the results of the producer-gas investigations, conducted by the Government in the fiscal years 1905–1909, and giving the essential data of each test, was revised for publication as a bulletin.

The producer-gas investigations were conducted under the advice of R. H. Fernald, engineer, and were in charge of C. D. Smith, engineer, assisted by F. E. Woodman, assistant engineer.

### BRIQUETTING TESTS OF COAL AND LIGNITES.

The work of the year included an investigation of the briquetting qualities of lignite from the Philippine Islands, a preliminary investigation with a hand press of subbituminous coals from Utah and Washington and of lignites from North Dakota and Texas, tests of cell pitch, sulphite liquor, starch and flour binders, and an inspection of several briquetting plants in the United States.

The tests made during the year were as follows:

*Tests of briquets of coal and lignite.*

| | |
|---|---|
| Tests with hand briquet press | 95 |
| Tests with Ladley briquet machine | 23 |

The manuscript of a report describing the briquetting of lignites from North Dakota, Texas, and California without the use of artificial binders was revised for publication as Bulletin 14. The text of a technologic report of the United States Geological Survey, "Binders for coal briquets," was revised for publication as a bulletin of the Bureau of Mines. Work on a bulletin summarizing the principal results of the briquetting investigations at St. Louis, Mo., Norfolk, Va., and Pittsburgh, Pa., from July, 1904, to July, 1910, was begun.

The briquetting investigations were under the charge of C. L. Wright, engineer.

### DETERIORATION AND SPONTANEOUS HEATING OF COAL IN STORAGE.

Careful study was made of the deterioration of coal stored under salt water, under fresh water, and in open air, the investigation being carried on at the request of and in cooperation with the Navy Department and the Panama Railroad Co.

Four kinds of coal were chosen for the test, as follows: New River, W. Va., coal, on account of its large use by the Navy; Pocahontas, Va., coal, because of its being used as a steaming and coking coal in the Eastern States and its being one of the coals used in the Panama Canal work; Pittsburgh coal, as a rich coking and gas coal; and Sheridan, Wyo., subbituminous coal, or "black lignite," as a type much used in the West. The New River coal was stored under sea water and also exposed to the air, indoors and outdoors, at three navy yards which differed widely from one another in climatic conditions. The Pocahontas coal was stored in a large pile outdoors on the Isthmus of Panama. The Pittsburgh coal was stored under fresh water and also exposed to the weather at Ann Arbor, Mich. The Wyoming coal was stored at Sheridan, Wyo., in open bins outdoors. The Appalachian coals tested lost practically none of their heating value in underwater storage for one year, and only about 1 per cent of it during open-air storage for the same period. Submerged storage, therefore, is not especially advantageous for these coals, except as a preventive of spontaneous combustion.

An investigation was made of the causes of spontaneous heating or combustion in coal and the means for its prevention. A number of commercial plants where spontaneous combustion of coal in storage was in progress were visited, and the conditions of storage were studied. Statistics gathered from nearly 1,200 large consumers of coal gave detailed information on more than 250 cases of spontaneous combustion. A laboratory study is in progress bearing on the rate of oxidation of coal at different temperatures and the influence, if any, of the sulphur in the coal, on the rate of oxidation and on spontaneous combustion.

In connection with mine-accident investigations, laboratory studies are being made of the escape of gas from coal and of the rate of oxidation of coal in atmosphere containing varying proportions of oxygen and carbon dioxide, and the bearing of the results on the treatment of mine fires.

Some work has been done on the study of the composition and quantity of the volatile matter given off at different temperatures by coal. One of the main purposes of this investigation is to provide data for increasing efficiency in the utilization of coal through the prevention of waste in volatile matter.

The following tests and analyses were made during the year in this branch of the work:

*Number of analyses, tests, and determinations.*

| Tests and experiments. | Analyses. | Determinations. |
|---|---|---|
| Coal analyses | 212 | 1,342 |
| By-product tests | 12 | 216 |
| Retort tests on composition of volatile matter | 4 | 68 |
| Experiments on spontaneous combustion | 79 | 395 |
| Friability tests of coal | 56 | 56 |
| Miscellaneous tests (gas analyses not included above, etc.) | ........ | 500 |
| Total | ........ | 2,577 |

During the year work on a bulletin describing an investigation of the volatile matter of several typical American coals was completed, a technical paper on the escape of gas from coal was prepared, and work on a report on deterioration and spontaneous combustion of coal in storage was begun.

The investigations mentioned were conducted by H. C. Porter, chemist, and F. K. Ovitz, assistant chemist.

### LIGNITE AND PEAT INVESTIGATIONS.

Investigations relative to the origin and utilization of peat have grown out of the study of the lignites on the public lands. The investigations include a study of the uses to which peat and lignite are put in Europe and America for fuel and other purposes, the methods of their mining and production, the preparation needed for most effective utilization, and the methods and machinery employed for these purposes. The investigation of peat also includes the determination of the origin, structure, and physical and chemical properties of the peats and lignites in the United States, their fitness for the uses proposed for them, and the determination of the best ways, under American conditions, of using peat and lignite for heat and power purposes.

It is believed that both peat and lignite can be made to partly replace ordinary coal in those parts of the country where they abound and ordinary coal does not occur. The work includes technologic and scientific investigations on the nature and uses of peat and lignite. The technologic investigations into the subject include the examination and recording of observations on peat-manufacturing machinery and plants in operation in this country, the examination of accounts of peat and lignite operations in European countries, the study of products to determine their relative value in proportion to the cost of production, the collection of samples of peat for chemical and physical analysis, and the personal examination of peat deposits to determine their comparative value for fuel purposes.

Scientific work has been carried on in the field and in the office, with especial attention to the chemical and physical features affecting the value of peat for fuel. Studies of peat with reference to its origin were also begun, with a view to throwing light on the problems concerning the origin and the coking qualities of coal.

A bulletin entitled "The value of peat for fuel and other purposes" has been revised and submitted for publication. A bulletin on the existing status of the peat-fuel industry in foreign countries is nearly ready for publication, and work on a bulletin dealing with some special uses of peat is well advanced.

Considerable time has been devoted to answering inquiries relating especially to the uses of peat and lignite. Before January 1, 1911, no complete record of this correspondence was kept. From January 1 to June 30, 1911, 212 letters relating strictly to this work were written.

The peat investigations were in charge of C. A. Davis.

### CONSTITUTION AND GENESIS OF COAL.

As a part of the general plan of the fuel investigations, a special study has been made of the lignites and subbituminous coals, with particular reference to their resinous constituents, the origin of these constituents, the changes they have undergone in the formation of lignite and other coal, and their relation to the coking qualities of certain coals. The results of this study are to be presented in a bulletin on the constitution and genesis of coal. This bulletin, which is now in course of preparation, includes a complete review of the literature pertinent to the origin of coal, a digest of related subjects, and a review of the results of investigation on this subject. The preliminary draft of the bulletin was completed during the last weeks of the fiscal year.

These investigations were conducted by Reinhardt Thiessen.

### INVESTIGATIONS CONCERNING THE CLINKERING OF COAL AND ACTION OF MINE WATERS ON STEEL.

A series of experiments was made to ascertain whether the tendency of a coal to clinker on grate bars can be determined by preliminary tests of small samples. The results indicate that a laboratory test for clinkering is capable of giving reliable results. Another series of experiments was undertaken with the purpose of finding a simple and inexpensive method of preventing the corrosion of steel pumps, pipes, beams, etc., such as are used in mining operations, in the presence of acid mine waters.

In connection with these investigations analyses of the following material were made:

Boiler feed waters and mine waters, 23; boiler compound, 1; coal ashes, 29; limestone and slag, 5. The fusion points of 29 samples of ash and clinker were determined, and a number of specific-gravity separations of coal were made. The above experiments required 483 separate determinations.

F. M. Stanton, chemist, was in charge of these investigations during the year.

### TECHNOLOGY OF PETROLEUM PRODUCTS.

The petroleum laboratory was occupied principally in the examination of crude petroleum from the Coalinga, Midway, Sunset, and Santa Maria oil fields of California and in ascertaining the heating value of crude oil and the fuels derived from it. A large number of examinations were made for the Army, the Navy, and other departments of the Government.

During the year work was completed on a bulletin describing the physical and chemical properties of the petroleums of the San Joaquin Valley of California. The specifications recommended by the Bureau of Mines for the purchase of fuel oil for the Government, with directions for sampling oil and natural gas, were published as a technical paper. The composition and fuel value of the liquids obtained by compressing natural gas were investigated, the tests having particular reference to the possibility of conserving natural gas by the manufacture of such liquefied products. A report giving the results of this investigation was prepared for publication as a technical paper. A bibliography of petroleum has been partly prepared.

The petroleum investigations were in charge of I. C. Allen, chemist, assisted by W. A. Jacobs and R. R. Matthews, junior chemists.

### PHYSICAL INVESTIGATIONS RELATING TO FUELS.

Preliminary experiments on a laboratory scale were made to determine the heat-insulating properties of various finely divided materials as compared with air. The object of these experiments, and of similar ones with the long combustion chamber, was to determine whether it is better to construct furnace walls with air spaces or to fill these spaces with certain finely divided materials, and what available materials are most efficient in reducing the loss of heat through the walls.

In connection with this investigation a number of materials were examined; 23 thermocouples, 34 thermometers, 1 ammeter, 2 galvanometers, and 1 voltmeter were calibrated.

The work of the section was in charge of J. K. Clement, physicist, with F. H. Ramsey, junior chemist, and W. L. Egy, junior physicist, assisting. Mr. Ramsey was engaged with experiments on the influence of carbon dioxide on the explosibility of mine gases. Mr. Egy was occupied with the necessary calibration of physical apparatus and instruments, with the measurement of temperatures in connection with fuel-efficiency investigations, and with an experimental investigation concerning the flow of heat through furnace walls.

Besides directing the work of the laboratory, Mr. Clement directed the special combustion investigations conducted with special reference to the development of more efficient furnace combustion in Government heating and power plants.

### WORK OF THE CHEMICAL LABORATORIES.

The general work of the chemical laboratories has already been mentioned above in reference to the analyzing and testing of fuels for the use of the United States and the inspection of coals used by the Government (p. 12); the analyzing and testing of fuels belonging to the United States (p. 14); the storage of coals (p. 26); and the technology of petroleum products (p. 28).

The work of these laboratories also includes the following inquiries: Combustion investigations, with special reference to Government furnaces; the chemical composition of coal, with especial reference to the more efficient use of different grades of coal; the inflammability of coal dust and mine gases, with especial reference to the health of miners, and the causes and prevention of mine disasters; and the properties and behavior of explosives, with special reference to mining and quarrying operations.

The combustion investigations comprised the chemical work in connection with the special combustion chamber, the gas producer and the cupola tests, and with Government heating-boiler tests. The results of these investigations are reported elsewhere.

In connection with the tests with the special combustion chamber, improved apparatus and methods were devised for sampling and analyzing the furnace gases. Description of these apparatus and methods appear in Bulletin 12, entitled, "Apparatus and methods for the sampling and analysis of furnace gases," by J. C. W. Frazer and E. J. Hoffman.

## CONSTITUENTS OF COAL.

The results of the preliminary work of Messrs. Frazer and Hoffman on the study of the chemical composition of coal were submitted for publication as a technical paper on "The constituents of coal soluble in phenol." This preliminary work has demonstrated that the extraction of coal with organic solvents and the examination of the various fractions obtained promise success in the effort to isolate and identify the constituents of coal, and thereby render possible a more intelligent study of coal with reference to its origin and more efficient use. Some of the substances obtained appear to be almost pure hydrocarbons, containing only small proportions of oxygenated compounds, but conclusions as to their real nature are premature.

A second investigation was started in which a large quantity of coal, 66 pounds, was extracted with pure pyridin. The coal selected is from the Pittsburgh bed, and is the same as that used, in the form of dust, for gallery tests as to the relative safety of different explosives. About 10.5 pounds of material soluble in pyridin has been prepared for fractionation and analytical studies.

During the year a series of experiments was made on the relative rates of oxidation of different coals by standard solutions of chromic acid and potassium permanganate. Twenty-four coals were examined, involving some 225 determinations.

The chemical investigations here mentioned were in charge of J. C. W. Frazer, chemist, assisted by E. J. Hoffman, assistant chemist, H. A. Neel, junior chemist (temporary), and L. A. Scholl, junior chemist.

## FUELS CHEMICAL LABORATORY.

This laboratory at the Pittsburgh experiment station is engaged in analyzing the samples of fuel collected as representing the deposits of fuel owned by the Government, or representing fuel for the use of the Government; or, in a few cases, collected in cooperation with State geological surveys.

The samples tested by the fuels chemical laboratory may be briefly classified in the following manner:

*Samples tested in the fuels chemical laboratory of the Bureau of Mines, at Pittsburgh.*

| | |
|---|---|
| Standard mine samples of coal: | |
| Collected by— | |
| Bureau of Mines | 377 |
| United States Geological Survey | 76 |
| General Land Office | 5 |
| Forest Service | 29 |
| Missouri Geological Survey | 127 |
| | 614 |
| Samples of dusts from mine-accidents division: | |
| Road dusts from coal mines | 24 |
| Coal dusts from coal mines | 26 |
| Coal dust partly coked by explosions and mine fires | 17 |
| Coal dust for inflammability test | 34 |
| Wood dust for inflammability test (pine, 1; oak, 1; mahogany, 1) | 3 |

| Samples of dusts from mine-accidents division—Continued. | |
|---|---|
| Gluten dust for inflammability test | 1 |
| Flour for inflammability test | 1 |
| Starch for inflammability test | 1 |
| Miscellaneous dusts for inflammability test | 5 |
| | 112 |
| **Miscellaneous samples:** | |
| Calcium chloride | 3 |
| Salt water | 2 |
| Mine water | 40 |
| | 45 |
| **Samples from fuel-testing division:** | |
| Coal, ash, residual fuel, etc., from tests | 421 |
| Peat | 74 |
| Petroleums | 111 |
| Coal purchases for inspection | 306 |
| Coal and coke samples from other Government bureaus | 60 |
| Slag, limestone, and miscellaneous | 17 |
| | 989 |

The following lignite, coal, peat, and oil samples were received from various sections of the bureau and from other departments:

*Samples of lignite, coal, peat, and oil received at fuels chemical laboratory.*

| | |
|---|---|
| Coking tests | 10 |
| Steaming tests | 218 |
| Briquet tests | 30 |
| Experimental investigations | 24 |
| Explosives | 8 |
| Inflammability of coal dust | 1 |
| General fuel testing for United States Army, Navy, etc | 52 |
| Gas-producer tests | 3 |
| Illuminating-gas investigations | 2 |
| Inspection of coals for Government use | 306 |
| General Land Office work | 5 |
| Combustion experiments | 59 |
| Mine-accidents investigations | 219 |
| Mine samples of coal, collected by Missouri Geological Survey | 127 |
| Mine samples (inspection of Government purchases of coal) | 10 |
| Mine samples (mine-accidents investigations at Pittsburgh) | 97 |
| Peat experiments | 74 |
| Petroleums from public land | 111 |
| Weathering tests for Navy and Isthmian Canal Commission | 22 |
| Bureau of Standards | 1 |
| United States Geological Survey, samples | 76 |
| Forest Sevice, samples | 29 |
| Mine inspection, Panama Railroad | 151 |
| Isthmian Canal Commission, special | 7 |
| Navy Department, samples | 10 |
| War Department, samples | 42 |
| | 1,694 |

Miscellaneous samples were received and analyzed at the Pittsburgh laboratory from other sections of the station's work as follows:

*Miscellaneous samples received at fuels chemical laboratory.*

| | |
|---|---|
| Electrical section: | |
| Mine waters | 40 |
| Gas-producer section: | |
| Limestones | 2 |
| Slag | 14 |
| Dust | 1 |
| Mine accidents: | |
| Calcium chloride | 3 |
| Salt water | 2 |
| Sawdust | 3 |
| Sulphur band | 1 |
| | 66 |
| Total samples received | [a] 1,760 |

The determinations made in analyzing the coal, lignite, peat, and oil samples at the Pittsburgh laboratory of the Bureau of Mines were as follows:

*Determinations at the fuels chemical laboratory.*

| Source of material analyzed. | Determinations. | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Moisture. | Ash. | Volatile matter. | Fixed carbon. | Sulphur. | Hydrogen. | Carbon. | Nitrogen. | Oxygen. | Heat value. | Total. |
| Steaming tests | 368 | 380 | 166 | 71 | 174 | 5 | 5 | 2 | 2 | 132 | 1,305 |
| Briquet tests | 67 | 65 | 64 | 25 | 59 | 5 | 5 | 4 | 2 | 62 | 358 |
| Coking tests | 22 | 22 | 20 | 10 | 44 | .... | .... | .... | .... | 12 | 130 |
| Experimental investigations | 72 | 39 | 39 | 5 | 146 | 40 | 40 | 153 | 3 | 118 | 655 |
| Explosives | 18 | 20 | 25 | 8 | 18 | .... | .... | .... | .... | ...... | 89 |
| Fuel testing for United States Army, Navy, etc | 111 | 121 | 102 | 47 | 109 | 25 | 25 | 29 | 10 | 90 | 669 |
| Inflammability of coal dust | 2 | 2 | ...... | ...... | 2 | .... | .... | .... | .... | ...... | 6 |
| Gas-producer tests | 4 | 4 | 4 | 2 | 4 | .... | .... | .... | .... | 3 | 21 |
| Illuminating-gas investigations | 4 | 5 | 4 | 2 | 4 | .... | .... | .... | .... | 4 | 23 |
| Inspection of coals for Government use | 521 | 508 | 375 | 218 | 420 | 27 | 27 | 37 | 12 | 400 | 2,545 |
| Combustion experiments | 111 | 117 | 113 | 51 | 56 | 4 | 4 | 4 | 2 | 43 | 505 |
| Mine-accidents investigations | 379 | 365 | 447 | 198 | 278 | 124 | 124 | 111 | 51 | 100 | 2,177 |
| Mine samples (inspection of Government coal purchases) | 19 | 17 | 19 | 12 | 16 | 5 | 5 | 6 | 3 | 10 | 112 |
| Mine samples (mine-accidents investigation at Pittsburgh) | 131 | 157 | 186 | 94 | 109 | 60 | 60 | 57 | 29 | 56 | 939 |
| Peat | 188 | 150 | 166 | 57 | 114 | 19 | 19 | 131 | 7 | 118 | 969 |
| Petroleums from public lands | ...... | ...... | ...... | ...... | 191 | 2 | 2 | .... | .... | 136 | 331 |
| Weathering tests of coal for Navy, etc | 30 | 25 | 8 | 4 | 48 | 27 | 27 | 20 | 11 | ...... | 200 |
| Bureau of Standards | 3 | 2 | 2 | 1 | 2 | 3 | 3 | 2 | 1 | 2 | 21 |
| Forest Service, samples | 76 | 61 | 59 | 29 | 59 | 53 | 53 | 45 | 20 | 66 | 521 |
| General Land Office work | 10 | 10 | 16 | 5 | 10 | 11 | 11 | 10 | 5 | 11 | 99 |
| Isthmian Canal Commission, special samples | 10 | 12 | 15 | 6 | 10 | .... | .... | .... | .... | ...... | 53 |
| Missouri Geological Survey, mine inspection | 178 | 225 | 276 | 123 | 190 | 83 | 83 | 91 | 38 | 71 | 1,358 |
| Navy Department, samples | 28 | 28 | 29 | 12 | 30 | 13 | 13 | 14 | 6 | 12 | 185 |
| Panama Railroad, mine inspection | 207 | 218 | 332 | 152 | 201 | 147 | 147 | 132 | 63 | 171 | 1,775 |
| United States Geological Survey, samples | 173 | 169 | 196 | 72 | 143 | 64 | 64 | 70 | 29 | 138 | 1,188 |
| War Department, samples | 77 | 71 | 104 | 39 | 52 | 40 | 40 | 45 | 16 | 27 | 511 |
| Total | 2,809 | 2,793 | 2,767 | 1,243 | 2,489 | 757 | 757 | 963 | 310 | 1,787 | 16,748 |

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[a] The analyses of coals and other fuels for use by the Government were mainly made at the Washington laboratory (p. 18).

The determinations made in analyzing the 66 miscellaneous samples were as follows:

*Miscellaneous determinations at fuels chemical laboratory.*

| Determinations. | Cupola tests. | Briquet section. | Electrical section. | Experimental. | Fuel testing. | Gas producer. | Mine accidents. | Peat investigations. | Petroleum. | General Land Office. | Isthmian Canal Commission. | War Department. | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Moisture |  |  |  |  |  | 1 |  |  |  |  |  |  | 1 |
| Loss on ignition |  |  |  |  |  | 16 | 5 |  |  |  |  |  | 21 |
| Silica ($SiO_2$) |  |  | 13 |  |  | 29 | 6 |  |  |  |  |  | 48 |
| Ferric oxide ($Fe_2O_3$) |  |  | 99 | 4 |  | 17 |  | 17 |  |  |  |  | 137 |
| Ferrous oxide (FeO) |  |  | 32 |  |  | 12 |  |  |  |  |  |  | 44 |
| Alumina ($Al_2O_3$) |  |  | 10 | 1 |  | 29 | 2 |  |  |  |  |  | 42 |
| Lime (CaO) |  |  | 12 | 1 |  | 28 | 9 |  |  |  |  |  | 50 |
| Magnesia (MgO) |  |  | 12 | 2 |  | 18 | 6 |  |  |  |  |  | 38 |
| Baryta (BaO) |  |  |  |  |  |  | 4 |  |  |  |  |  | 4 |
| Sodium oxide ($Na_2O$) |  |  | 17 | 1 |  | 10 | 8 |  |  |  |  |  | 36 |
| Potassium oxide ($K_2O$) |  |  |  | 1 |  | 10 |  |  |  |  |  |  | 11 |
| Titanium oxide ($TiO_2$) |  |  |  | 1 |  |  |  |  |  |  |  |  | 1 |
| Ferrous sulphide (FeS) |  |  | 35 | 6 |  |  |  |  |  |  |  |  | 41 |
| Phosphorus (P) | 37 |  |  | 55 | 5 |  |  |  |  |  |  | 2 | 99 |
| Sulphur dioxide ($SO_2$) |  |  | 53 | 6 |  | 3 | 4 |  |  |  |  |  | 66 |
| Sulphur (S) |  |  |  | 1 |  |  |  |  |  |  |  |  | 1 |
| Chlorine (Cl) |  |  | 10 |  |  |  | 10 |  | 14 |  |  |  | 34 |
| Carbon dioxide ($CO_2$) |  |  | 6 |  |  | 1 |  |  |  |  |  |  | 7 |
| Alkalinity |  |  | 6 |  |  |  |  |  |  |  |  |  | 6 |
| Acidity |  |  | 48 |  |  |  |  |  |  |  |  |  | 48 |
| Real specific gravity | 20 |  |  |  | 3 |  |  |  |  | 12 | 4 |  | 39 |
| Apparent specific gravity |  |  |  |  | 2 |  |  |  |  |  | 2 |  | 4 |
| Fineness |  |  |  |  |  |  |  |  |  |  | 4 |  | 4 |
| Extraction |  | 2 |  |  |  |  |  |  |  |  |  |  | 2 |
| Total | 57 | 2 | 353 | 79 | 10 | 174 | 54 | 17 | 14 | 12 | 10 | 2 | 784 |

Grand total of all determinations, 17,529.

The analytical work mentioned above was in immediate charge of A. C. Fieldner, assistant chemist, who was assisted by D. I. Brown, C. K. Glycart, Max Hecht, Harold Isenberg, C. J. Monahan, G. E. Webster, and A. M. Wedd, junior chemists, and L. L. A. Moran, junior computer.

A systematic investigation of the methods of fuel analysis was started with a view to the improvement of existing methods. A report on "Methods of analyzing coal and coke," to be published as a technical paper, was completed, and will soon be published. Considerable time was given to checking a tabulation of the coal analyses made in connection with the fuel-testing investigations of the Government from July 1, 1904, to June 30, 1910. These analyses and a description of the samples are to be published as a bulletin of the Bureau of Mines.

## MINE-ACCIDENTS INVESTIGATIONS.

### MINE-RESCUE METHODS.

With a view to the equipment of the several mine-safety stations and cars of the bureau with apparatus of the latest and most approved design, J. W. Paul, mining engineer, and Carl Scholz, consulting mining engineer, inspected the various Government and private mine-rescue and training stations in England, France, Belgium, Germany, and Austria during September, October, and November, 1910. They visited also the several manufacturing establishments where breathing apparatus are made, and many collieries in each of these countries, and discussed with both miners and operators the relative merits of different types of equipment and methods.

Three types of equipment were selected, one English and two German, and a number of sets of each type of apparatus were purchased for equipping the six mine-safety cars and the six stations.

At the beginning of the fiscal year there were in operation four of these stations—at Pittsburgh, Pa., Urbana, Ill., Knoxville, Tenn., and Seattle, Wash. During the year there were added a station at McAlester, Okla., and a temporary station at Birmingham, Ala. Six mine-safety cars with headquarters respectively at Wilkes-Barre, Pa., Trinidad, Colo., Evansville, Ind., Rock Springs, Wyo., Billings, Mont., and Huntington, W. Va., were equipped and put in operation during November and December, and authority was given for two additional cars, one for the Pittsburgh station, and another for the Southwestern coal field, which extends from Iowa across Missouri and Kansas into Oklahoma and Arkansas. A permanent building at Birmingham, Ala., will be ready for occupancy as a rescue station by September, 1911. The plot of ground on which this building stands was given to the Government by J. H. Woodward, of Birmingham. The building for the station at Urbana was supplied by the University of Illinois; the station at Seattle was housed by the University of Washington. At McAlester, Okla., the bureau occupies a small brick building. This building, with the ground on which it is erected, cost about $10,000, but the ground and building are now offered to the Government for continuous station use at a cost of about $4,000.

At each of these stations there is a supply of mine-rescue and first-aid equipment, all in charge of a practical miner trained in both first-aid and rescue methods. Each mine-safety car has a full supply of rescue and first-aid equipment and of fire-fighting appliances.

The work of the section was organized during October, 1910, at the time of the delivery of the first mine-safety cars. In the several mining centers the car and station crews have given demonstrations and instructions in mine-rescue methods and first aid to the injured. Each mine at which a disaster of any consequence occurred was visited and investigation was made to ascertain the physical condition of the mine at the time of the disaster in order to determine the factors that contributed to the destruction of life or property.

The personnel of the section consisted of 31 persons, who were stationed on or at the various cars and stations. Each car had a mining engineer in charge and a foreman miner and a first-aid miner, both trained in rescue and first-aid methods; at Pittsburgh was the engineer in charge of the section, with an assistant engineer, a foreman miner, and a first-aid miner.

In a number of instances the appliances of the mine-safety car were effectively used in saving life. Since the beginning of this work by the Government at least 15 lives have been saved.

The work in the field has been the more effective because of cooperation of mine operators, miners, and officials of the miners' organization.

The following is a summary showing the number of visitors (mostly miners) who during the year have attended the demonstrations and lectures at the cars and stations, and the number of miners who have received mine-rescue instruction and first-aid training.

*Visitors at mine-safety car and station lectures, demonstrations, and first-aid classes during the fiscal year.*

| Car or station. | Visitors. | At lectures. | Wearing apparatus. | Given partial training. | | Certificates authorized. | Certificates issued. |
|---|---|---|---|---|---|---|---|
| | | | | Rescue. | First aid. | | |
| Car: | | | | | | | |
| No. 1 | 6,820 | 5,963 | 424 | 891 | 922 | 119 | 74 |
| No. 2 | 19,447 | 14,901 | 1,306 | 1,594 | 1,718 | 253 | 145 |
| No. 3 | 22,422 | 11,593 | 1,438 | 2,510 | 2,429 | 99 | 69 |
| No. 4 | 5,069 | 4,662 | 442 | 775 | 596 | 33 | 11 |
| No. 5 | 7,372 | 4,791 | 551 | 654 | 711 | 47 | 41 |
| No. 6 | 8,575 | 27,238 | 112 | 107 | 79 | 8 | 6 |
| Stations: | | | | | | | |
| Pittsburgh | 675 | 831 | 60 | 190 | 35 | 71 | 71 |
| Urbana | 379 | 1,182 | 190 | 176 | 178 | 33 | 30 |
| Knoxville | 7 | | | | | 10 | 10 |
| McAlester | 317 | 115 | 60 | 156 | 8 | 5 | 4 |
| Seattle | 782 | 104 | 98 | 105 | 100 | 49 | 46 |
| Birmingham | 185 | 64 | 72 | 25 | 7 | 7 | 2 |
| Total | [a]72,060 | [a]71,444 | 4,753 | 7,183 | 6,783 | 734 | 509 |

[a] Of these more than 50,000 are estimated to have been coal miners.

The requests for training in rescue methods and first aid have been much greater than the present facilities of the section can accommodate. The cars were operated during only the eight months from November, 1910, to June 30, 1911, inclusive.

During the year numerous informal tests and demonstrations were made with miners' safety lamps in the presence of miners and mine officials at the Pittsburgh station.

A report on the use and care of mine-rescue breathing apparatus was prepared for publication as Miners' Circular 4. Work on a report describing European mine-rescue stations was advanced, and work on a report dealing with mine fires, to be published as a miners' circular, was begun.

The work of the section was in charge of J. W. Paul, mining engineer. Charles Enzian, J. C. Roberts, R. Y. Williams, S. S. Smith, J. J. Rutledge, mining engineers, and H. M. Wolflin, assistant engineer, were placed in charge of the six mine-safety cars operated by the bureau.

## EXPLOSIVES.

### PHYSICAL EXAMINATION AND TESTING OF EXPLOSIVES.

During the year physical tests of explosives were made with a view to determining their permissibility in coal-mining operations in mines where, from the presence of either mine gases or inflammable coal dust, the conditions were unfavorable to safety. During the year 40 explosives passed the tests required. The tests made included the following:

*Examinations and tests of explosives.*

| | |
|---|---|
| Physical examination | 94 |
| Trauzl lead blocks | 313 |
| Small lead blocks | 148 |
| Calorimeter | 106 |
| Rate of detonation | 402 |
| Flame tests | 171 |
| Gas and dust gallery No. 1 | 1,876 |
| Gas and dust gallery No. 2 | 14 |
| Ballistic pendulum | 501 |

| | |
|---|---|
| Impact tests | 60 |
| Explosion by influence tests | 295 |
| Rate of burning | 10 |
| Miscellaneous, calibrations, etc | 72 |
| Pressure gage No. 1 | 245 |
| Pressure gage No. 2 | 371 |
| Screening tests of black blasting powder | 4 |
| Total | 4,682 |

The informal tests of explosives during the year included the following:

September 24, 1910, for the Pittsburg-bed operators of Ohio;

October 21–27, 1910, for the mine-rescue corps of the Bureau of Mines, and the mine-rescue and first-aid corps of the State of Illinois;

January 28, 1911, for the Hustead-Semans Coal & Coke Co., Uniontown, Pa.;

February 2, 1911, for the professors and students of the Case School of Applied Science, Cleveland, Ohio;

April 17, 1911, for the National Waterways Commission of Congress, Washington, D. C.;

April 28, 1911, for the mine foreman and fire bosses of the seventeenth inspection district of Pennsylvania;

June 27, 1911, for the professors and students of the Case School of Applied Science, Cleveland, Ohio;

June 28, 1911, for the Society for the Promotion of Engineering Education;

June 30, 1911, for the Secretary of the Interior and other visitors.

Special tests were made as follows:

(1) At Franklin Furnace, N. J. To determine the noxious gases in the gaseous products of explosion of explosives used in metalliferous mines;

(2) At West Winfield, Pa. To determine the noxious gases in the gaseous products of explosion of explosives used in metalliferous mines;

(3) At New Castle, Pa. Comparative economy tests of block-hole and adobe shots, using limestone blocks;

(4) Special tests with 30, 40, 50, and 60 per cent nitroglycerin dynamite, 40 per cent strength gelatin dynamite, and 40 per cent strength ammonia dynamite.

(5) Special tests to determine the relative bullet-resisting value of different building materials when used in magazine construction;

(6) Special Trauzl lead-block test to determine the efficiency of the explosive when fired with different kinds and quantities of stemming;

(7) Special tests with various sizes of grain of black blasting powder of high density;

(8) Special tests to determine the liability of the cartridge wrapper of an explosive submitted for permissible tests to cause ignition of gas and dust when the explosive, freely suspended, is fired in a gas-and-dust mixture;

(9) Special tests to determine the value of Hercules blasting plugs when used in place of stemming;

(10) Special tests of five potassium-chlorate explosives with the small impact machine, to determine the effect of storage and of alternate moistening and drying of these explosives;

(11) Special tests with Grisutina, a Mexican explosive;

(12) Special tests with Fumicide to determine its value as a neutralizer of noxious gases, when charged in a bore hole with 40 per cent dynamite;

(13) Special tests with Kuhlmann safety-fuse igniter, when used with Kuhlmann safety fuse, to determine its relative safety when used in coal mines.

Some, but not all, of these tests have been completed.

A report embodying results of an investigation of a number of explosives used in coal mines and describing the apparatus and methods used at the Pittsburgh station for testing explosives was finally revised for publication as Bulletin 15. A report on the use of permissible explosives was submitted for publication as a bulletin. A report stating the tests for determining the permissibility of explosives and a list of the explosives that had passed these tests prior to January 1, 1911, was issued as a miners' circular. A technologic bulletin of the United States Geological Survey, "A primer on explosives for coal miners," was revised for publication as a bulletin of the Bureau of Mines. The results of an investigation of fuse and miners' squibs were submitted for publication as a technical paper, and a report on the effect of stemming on the efficiency of explosives was begun.

The work of the explosives section was in charge of Clarence Hall, explosives engineer, assisted by S. P. Howell, assistant engineer, and A. B. Coates, A. J. Hazelwood, W. N. Gallinger, J. E. Hammond, H. I. Smith, and H. F. Braddock, junior engineers.

### CHEMISTRY OF EXPLOSIVES.

During the summer months of the year the chemist in charge made an extensive trip through Alaska (on leave without pay), and on this trip obtained much information in regard to the use of explosives in both the gravel and the lode mines of that country. A report was prepared during the year, at the request of the Isthmian Canal Commission, dealing with some problems involved in the use of fuse in the work on the Isthmus of Panama, and the chemist in charge visited the Canal Zone during the month of December.

In the course of the year a number of new analytical methods have been developed by the laboratory; these greatly lessen work and increase efficiency in the analysis of explosives. There have been also devised several pieces of apparatus for determining the physical and chemical characteristics of explosive substances. Other new methods have been suggested, covering the determination of pressures, the determination of the rate of detonation of explosives, the efficiency of detonators, etc.

The work done by the explosives chemical laboratory during the year is shown by the following tabular statement:

*Work of the explosives laboratory.*

| | |
|---|---|
| **Analyses:** | |
| Dynamite | 403 |
| Mining explosives | 127 |
| Black powder | 74 |
| Electric detonators | 26 |
| Blasting caps | 4 |
| Safety fuse | 11 |
| Products of combustion of mining explosives | 87 |
| Railroad torpedoes | 2 |
| Fuse lighters | 3 |
| **Determinations:** | |
| Moisture in explosives | 125 |
| Nitrogen in nitroglycerin | 25 |
| **Analyses and determinations not included above** | 178 |
| **Physical tests:** | |
| Electric detonators | 2,325 |
| Safety fuse | 357 |
| Blasting caps | 30 |
| Railroad torpedoes | 10 |
| Mining explosives | 110 |
| **Centrifugal exudation tests of dynamites** | 925 |
| **Determinations of absolute density of explosives** | 49 |
| **Determinations of gravimetric density of explosives** | 4 |
| **Stability tests (heat tests) of explosives** | 150 |
| **Physical tests not included in the above** | 37 |
| Total analyses, tests, and determinations | 5,062 |

There were prepared and submitted for publication a report on "The thermochemistry of explosives," to form a part of Bulletin 15, and a report on "The rate of burning of fuse," to be published as a technical paper.

Many data have been accumulated for the preparation of a bulletin on "Analyses of explosives," and the work of preparing the manuscript is in progress. A report on "The exudation of nitroglycerin from dynamite and similar explosives" is also being prepared.

The explosives chemical laboratory is in charge of W. O. Snelling, chemist, with the following assistants: C. G. Storm, explosives chemist; A. L. Hyde and W. C. Cope, assistant chemists; and C. A. Taylor, J. H. Hunter, and C. A. Lambert, junior chemists.

### ELECTRICITY IN MINING.

The electrical section of the Bureau of Mines is particularly concerned with the problem of safeguarding life and property from the dangers that attend the use of electricity under ground. During the year a permanent organization of the section has been effected, and the equipment has been greatly improved. The laboratory has been put in excellent condition.

The investigation of explosion-proof motors has occupied more time than any other inquiry. Four motors made by three different companies have been examined, and a fifth is now under test. Two complete reports and one preliminary report have been made covering this work. The tests have been carried on very carefully and hence have consumed a great deal of time. The investigation required the entire time of one man throughout the year.

The investigation next in importance has been the determination of the action of mine water upon the insulation of electric conductors. This investigation, which required much preparation and the purchase of considerable equipment, was started on January 3, 1910, and has been in progress since that date. It will be carried on for at least six months longer. The investigation has required on an average one man's time for four hours daily since November, 1910.

Several other investigations have received attention, principally in the way of preparation and preliminary tests. Among these are an investigation of explosion-proof switches; an investigation of the risk of gas ignition from the breaking of incandescent electric lamps in an explosive gas mixture; an investigation of the behavior of electric flashes in the presence of coal dust; and an investigation of portable electric shot-firing devices.

Some work was done upon an electric methane detector, an electric pressure indicator for the experimental mine, and an electrically operated humidifier for moistening mine air.

The electrical equipment of the experimental mine has been under the supervision of this section. Specifications were written for the generating set, and the plans and specifications for the underground electric wiring were prepared.

In January, 1911, H. H. Clark, electrical engineer, was appointed chairman of a committee to study the power-plant conditions and requirements of the Pittsburgh station. A complete investigation was made and a report submitted in May, 1911. Specifications for a new engine-driven generating set have since been drawn up.

An outline for a code of regulations, modeled after the English code for the use of electricity in mines, was drawn up and used as the basis of a report made by a committee of the American Mining Congress. The report of this committee was adopted almost verbatim by the Pennsylvania Legislature and has become a law of that State.

The testing equipment used in connection with gallery No. 2 has been thoroughly overhauled and arranged to the best advantage. Gallery No. 2 is a steel shell 30 feet long by 10 feet in diameter, provided with paper-cloth diaphragms for retaining suitable gas mixtures.

Gallery No. 3 has been redesigned so that tests can be made more rapidly and effectively. This is a small cubical steel box with plate-glass doors.

In connection with the cable-insulation test, a very sensitive galvanometer and accessories have been mounted upon a suitable concrete pier in the laboratory and a high-potential testing transformer has been purchased for the same test.

A new gallery has been designed for the investigation of electric flashes in the presence of coal dust, and an order has been placed for its construction.

The following is a list of the number of tests and observations made during the fiscal year 1911:

*Tests and observations of the electrical section of the Bureau of Mines.*

| Nature of test. | Number of tests. | Number of observations. |
|---|---|---|
| Explosion-proof motors | 576 | 5,184 |
| Cable test | 250 | 650 |
| Test of power plant and turbine | 3 | 754 |
| Pressure indicator | 80 | 400 |
| Methane indicator | 77 | 360 |
| Incandescent-lamp test | 40 | 200 |
| | 1,026 | 7,548 |

During the year a report on the purpose of the investigations relating to electricity in mining and the equipment used in these investigations and a report on the causes and prevention of electrical accidents in mines were submitted for publication—one as a technical paper, the other as a miners' circular. A report on tests of explosion-proof motors, to be published as a bulletin, was begun.

H. H. Clark, electrical engineer, is in charge of the section. He is assisted by L. C. Ilsley, assistant electrical engineer, and R. W. Crocker, junior engineer.

## OCCURRENCE OF MINE GAS.

The inflammable gas that emanates from coal is an agent in explosions that often cause serious mine fires and kill or injure a large number of miners every year. In an endeavor to ascertain the laws governing the distribution and occurrence of this gas, examinations have been made in various coal fields, with especial reference to geologic structure, depth below the surface, and character of the coal, to the end that a basis might be found for predicting outbursts of gas in mines.

This work was taken up originally by R. T. Chamberlin under the technologic branch of the Geological Survey, and later by N. H. Darton, who was transferred from the Geological Survey to the Bureau of Mines. The satisfactory prosecution of this work involved a determination of the structure in certain typical areas and the collection and analysis of samples of mine air from different parts of mines in these areas. The northern anthracite field of Pennsylvania, including Luzerne and Lackawanna Counties, was selected for the study, because of its importance as a mining region, the variety of geological structure involved, and the abundance of mine gases in portions of the region. The many folds and faults in this region, and its relation to other areas in which the same strata were comparatively flat, furnish conditions especially favorable to such an investigation.

Several representative mine workings were selected as likely to afford the most definite comparative results, and many samples of return air containing the gaseous emanations from districts of known extent and structure were collected. The cross section of the airway and the velocity of the air were measured at each point of sampling, so that the total volume of gas ($CH_4$) in the air could be calculated. The samples were analyzed in the laboratory of the Bureau of Mines, in Pittsburgh.

Maps that show the structural conditions in the workings where the samples were collected are being prepared and these maps, with observations on the occurrence of gas in the anthracite mines are being made ready for publication in a bulletin of the Bureau of Mines. Subsequently one or more other regions in different coal fields will be studied with a view to procuring additional data on this important subject.

## CHEMISTRY OF MINE GASES AND NATURAL GAS.

During the year considerable work was done by G. A. Burrell, assistant chemist, in cooperation with G. S. Rice, mining engineer, on mine-gas problems. These problems relate especially to the effect of barometric pressure on the exudation of methane in coal mines; the composition of the gases produced by mine fires and explosions; and the efficient determination of the gases in normal mine air. Mr. Burrell visited several mines for the purpose of making first-hand studies of conditions prevailing at mine fires and after explosions in mines, and the chemistry of mine air under normal mine conditions.

The following is a brief summary of the work accomplished during the year:

Biweekly analyses of the natural gas used at the Pittsburgh station in testing explosives, safety lamps, electric lamps, motors, etc.;

The analysis of all gas-air mixtures used in conducting tests;

The analysis of about 500 mine-gas samples representing gas from mines under normal and abnormal conditions;

A special study of the effect of barometric pressure on the exudations of methane in coal mines;

The development of types of gas-analysis apparatus for all classes of gas-analysis work;

An investigation of the relative effect of noxious gases, such as carbon monoxide, on birds, on mice, and on men;

A study of natural gas and the devising of apparatus for its analysis;

An investigation of the probable vitiation of mine air by the exhaust from gasoline locomotives;

The development of an improved apparatus for use in controlling the percentage of gases in mine air;

An investigation of the liquefaction of natural gas and the properties and uses of the liquefied products, such as gasoline;

Analyses of " air " from different types of breathing apparatus.

The manuscript of a paper on the characteristics of the natural gas used at the Pittsburgh station for testing explosives was revised for publication in Bulletin 15; a paper describing the analytical methods used in determining the constitution of samples of natural gas from the oil fields of southern California was submitted for publication in a bulletin, and work was begun on a report describing types of apparatus, designed by G. A. Burrell, for analyzing mine gases and natural gas.

F. M. Seibert and L. D. Belden, junior chemists, assisted Mr. Burrell in his investigations.

### PHYSICAL INVESTIGATIONS OF MINE GASES.

The influence of carbon dioxide on the explosibility of mine gases has been investigated for the purpose, first, of determining the practicability of introducing carbon dioxide into mine workings to extinguish fires and prevent explosions, and the quantity of this gas which would have to be introduced to render mine gases nonexplosive, and, second, to furnish data for men engaged in fighting mine fires on the range of explosibility of mixtures of methane, air, and carbon dioxide.

The results of the investigations lead to the following conclusions:

(1) Carbon dioxide is more effective than nitrogen in preventing gas explosions; its greater effectiveness may be accounted for by its higher specific heat;

(2) The addition of 25 parts (by volume) of $CO_2$ to 75 parts of the most explosive mixture of methane and air renders the mixture nonexplosive;

(3) When carbon monoxide is introduced in place of oxygen—this occurs whenever the former is produced in a mine by imperfect combustion—7 per cent of $CO_2$ is sufficient to prevent explosion.

The work of this section was in charge of J. K. Clement, physicist, with F. H. Ramsey, junior chemist, and W. L. Egy, junior chemist, as assistants.

### INFLAMMABILITY OF COAL DUST.

Since the publication of the results of the preliminary work on the investigation of the inflammability of coal dust, reprinted in Bureau of Mines Bulletin 20, " The explosibility of coal dust," the method of measuring the relative inflammability of coal dusts has been greatly improved. During the year the dusts prepared from a number of coals were examined, involving about 1,070 determinations. A laboratory study was made of the effect of varying proportions of shale dust on the inflammability of coal dusts. The relative inflammability of dust at different temperatures was also studied.

The inflammability of samples of wood dust, sugar, asphalt, lycopodium, gluten, starch, and flour was studied in the same way. The preparation of a bulletin embodying the results of the year's work on the inflammability of coal dust was begun.

The investigations were in charge of J. C. W. Fraser, chemist, assisted by E. J. Hoffman, assistant chemist; H. A. Neel, junior chemist (temporary); and L. A. Scholl, junior chemist.

### MINE METHODS AND EQUIPMENT.

The time of Charles Enzian, J. C. Roberts, J. J. Rutledge, R. Y. Williams, and Sumner S. Smith, mining engineers, and of H. M. Wolflin, assistant mining engineer, was for the most part taken up in the routine work of the mine-safety cars. When they had opportunity, these engineers made examinations of the various mines in the vicinity of the stations at which the cars stopped. Considerable mine-investigation work was done in Colorado, Utah, Wyoming, and Missouri.

H. I. Smith reported for duty November 15, 1910. He was on general work until January 9, when he left for McAlester, Okla., where he was engaged in equipping the McAlester station. During April he was engaged in general investigative work in the Missouri field, and reported for duty at Pittsburgh about May 1, 1911.

Charles Enzian, with headquarters in the Federal building at Wilkes-Barre, Pa., is now engaged in an investigation of the system of filling mine workings in the anthracite region with sand and culm by flushing.

The compiling of a detailed account of the great coal-mining disasters that have occurred in this country during the past decade was advanced. Work on a report dealing with mine fires was begun. Considerable time was given by G. S. Rice to the revision of a technologic bulletin of the United States Geological Survey, "The explosibility of coal dust," for publication as a bulletin of the Bureau of Mines. Mr. Rice also prepared a report on coal-dust explosions, which was printed as Miners' Circular 3.

The personnel of the section comprised G. S. Rice, Charles Enzian, J. C. Roberts, J. J. Rutledge, R. Y. Williams, and Sumner S. Smith, mining engineers; H. M. Wolflin and L. M. Jones, assistant engineers; and H. I. Smith and Charles Shorkley, junior engineers.

### MINE FILLING (FLUSHING) TO REDUCE WASTE, SURFACE SETTLING, AND MINE FIRES.

In consequence of the annual waste in this country of some 200,000,000 tons of bituminous coal and of some 80,000,000 tons of anthracite coal, because of imperfect mining methods, the Bureau of Mines has undertaken an inquiry into the possibility of reducing this waste, and at the same time of making the mines safer and the surface over the mines less liable to settle as the removal of the coal proceeds, through the more extensive use of a system of mine filling or flushing, such as was initiated in the Pennsylvania anthracite fields some years ago, and later has been more largely developed in several European mining countries.

The conditions in the anthracite region being especially favorable for such a study, one of the mining engineers of the bureau, Charles Enzian, was assigned to this investigation, with headquarters at Wilkes-Barre. Mr. Enzian is familiar with the engineering practice and mine methods in the anthracite region and will investigate especially the engineering problems involved. Meanwhile N. H. Darton, geologist, was also assigned to this work with special instructions to map the distribution of those sands, gravels, and other materials in the northern anthracite coal field which may be considered available for use in mine filling or flushing operations.

Eli T. Conner and William Griffith, mining engineers of large experience in the anthracite region, have brought together a large amount of valuable data bearing on flushing in connection with the studies they undertook for the city of Scranton with the purpose of preventing the caving of the surface from the extensive excavations made in mining underneath the city. The data they brought together in this connection have been obtained by the Bureau of Mines and will be published as a bulletin of the bureau.

### EXAMINATION OF LAWS AND REGULATIONS FOR INCREASING SAFETY.

In order that the bureau may be able to point out the laws and regulations best adapted to prevent accidents in mining, quarrying, and metallurgical industries of this country, it has been necessary to bring together the laws, rules, and regulations found to be now in force in this and in other mining countries. This work, which is now well under way, includes the collection and examination of the mining laws of the United States and of the several States, and the State mining regulations, and the collection and examination, so far as practicable, of foreign statutory mining laws and regulations. The work also includes a complete annotation of all the statutory laws relating to mine safety, showing the construction various courts have placed upon each act or section wherever such decisions may be found, and an alphabetical list or glossary of mining words, terms, and phrases, showing where such words or phrases have been judicially defined.

In order to ascertain the construction placed upon various statutes, the law examiner examined critically the separate volumes of the United States Supreme Court Reports, and is proceeding in the sane manner with the decisions of all inferior Federal courts. It is planned to continue the work under this general system as to the several State statutes and reports, and also to collect and arrange the digests of all decisions that are not strictly constructions of any statute and to arrange tables of cases.

The work of the section is in charge of J. W. Thompson, law examiner.

### MINE-ACCIDENTS STATISTICS.

A fundamental necessity in any attempt at bettering conditions involving the safety of miners being accurate statistics of the number of miners annually injured and killed, and the causes of the accidents, the Bureau of Mines has made preparation to collect such statistics from all mines and quarries. In the fiscal year ended June 30, 1911, owing to the lack of sufficient funds, little work was done other than to outline the course of procedure to be followed in gathering figures and to collect statistics relating to accidents at coal mines. F. W. Horton, assistant engineer, was placed in charge of this work. The preparation of a report on coal-mine accidents in 1910, to be published as a bulletin of the Bureau of Mines, was begun.

The present intent is to extend this work to cover accidents at ore-dressing plants, cement mills, blast furnaces, etc., if funds are provided.

## OTHER TECHNOLOGIC INVESTIGATIONS PERTINENT TO THE MINING INDUSTRY.

Several technologic investigations for which there appeared urgent need in connection with the mining, quarrying, and metallurgical investigations were carried on by the Bureau of Mines during the fiscal year 1910–11 as circumstances permitted.

For the most part these investigations have been inherited from the technologic branch of the United States Geological Survey, and in such cases the work has been continued by the experts transferred from the Survey to the Bureau of Mines or subsequently added to the rolls of the bureau. The following are among the more important of these investigations:

### COKE AND COKING OPERATIONS.

During the progress of the fuel investigations under the Geological Survey, from 1904 to the establishment of the Bureau of Mines on July 1, 1910, considerable work had been done in investigating the coking qualities of different coals, especially those in or adjacent to public lands in the Rocky Mountain region. In connection with these investigations coke was made from a large number of coals which prior to that time had been regarded as noncoking. For the purpose of testing the quality of the coke made from these coals, arrangements were completed for experiments with these different varieties of coke in a small-sized foundry cupola. Melting tests of each type of coke were made to supplement the chemical and physical laboratory tests.

This information is necessary to a careful study of the combustion processes and other chemical changes taking place in the cupola during the burning of the coke and the melting of the metal. A considerable amount of valuable data on these subjects has been obtained. Plans have been prepared for extending similar investigations to other types of furnaces, and it is believed that the results will be of material value in connection with a wide variety of metallurgical operations. The work is being carried on under the direction of A. W. Belden, engineer.

### SMELTER FUMES.

Another of the investigations begun under the Geological Survey and continued by the Bureau of Mines relates to smelter fumes, which in California and some other States have proven destructive to Government forests. As continued under the Bureau of Mines, this work has been placed under the direction of F. G. Cottrell, who has given up his professorship in the University of California in order to devote his entire time to it.

The investigation should be extended to include different types of smelters and the behavior in these smelters of different varieties of ore, and to the various possibilities of preventing or lessening the escape of deleterious fumes in smelter operations.

### TUNNEL METHODS.

The experience of the United States Reclamation Service in the loss of men from the poisonous gases resulting from the use of explosives in tunnels and in the variable rate of progress in cutting tunnels has been one of the chief causes of the Bureau of Mines beginning an investigation into modern tunneling methods. This inquiry, which is now well under way, is under the general supervision of D. W. Brunton, consulting engineer, and J. A. Davis, assistant engineer.

Careful observations have been made by Mr. Davis of a number of the larger tunnels now being driven, and a large amount of information has been collected concerning tunneling methods used in different countries.

### FURNACE SLAGS.

The investigation of furnace slags was taken up by the technologic branch of the Geological Survey in connection with its fuel investigations, and has been continued since that time on a small scale as circumstances would permit. The investigation has been extended to include an examination of the different types of furnace slags and the influence of different metals and other mineral substances on the character and value of the slags, and also the influence of metals like titanium on the behavior of the molten iron in the furnace.

### WASTE IN METAL-MINING AND METALLURGICAL OPERATIONS.

In connection with the study of accidents in metal-mining and metallurgical operations, the engineers of the bureau have collected considerable data relative to the waste of resources in metal-mining and metallurgical operations. The information in hand indicates the large extent of this waste and the importance of further investigations to determine how it may be reduced and largely prevented. Similar information has been obtained with reference to the wastes in a number of the miscellaneous mineral industries of the country.

### QUARRY OPERATIONS.

The statistical data collected by the Bureau of Mines indicate that the loss of life in quarrying operations in this country is far larger than it is in other countries. A preliminary examination into the quarry methods and practices of the country indicates that in addition to this loss of life there is a large waste of valuable quarry products.

An investigation of these quarry methods has been started to discern how both this waste and the loss of life may be largely reduced.

It is hoped that during another fiscal year the funds at the disposal of the bureau may be sufficient to permit the extension and more rapid progress of this investigation. On April 29, 1911, A. S. Watts, quarry technologist, was placed in charge of this work.

### MINE INSPECTION IN THE TERRITORIES.

By direction of the Secretary of the Interior, and by virtue of the authority of acts of Congress, mine inspection in the territories is under the supervision of the Director of the Bureau of Mines, who issues all necessary instructions and receives monthly reports of progress.

Jo E. Sheridan was mine inspector for the Territory of New Mexico during the fiscal year.

On April 19, 1911, under the authority given by the act making appropriations for the sundry civil expenses of the Government for the fiscal year 1912, the President appointed Sumner S. Smith, mining engineer, mine inspector for Alaska with headquarters at Juneau. Mr. Smith's appointment became effective July 1, 1911.

## ADMINISTRATION.

### CORRESPONDENCE AND RECORDS.

The work of the year in the section of correspondence and records consisted in referring and filing the bureau's official correspondence and supervising the stenographic service. The filing and recording of this correspondence necessitated the services of three file clerks; the stenographic work required the services of three permanent stenographers and for a part of the year of three temporary stenographers. Considerable additional labor was required in installing a new filing system.

The number of pieces of mail received and handled during the year was nearly 55,000. A steady increase in the corrospondence was shown during the year.

### PERSONNEL.

When the Bureau of Mines was organized on July 1, 1910, it had a force of 124 appointees. During the fiscal year 118 permanent appointees and 160 temporary appointees were added to the force, making a total of 402 appointments. There were separated from the service 44 permanent appointees, leaving 198, and 128 temporary appointees, leaving 32, or a total force of 230 employees holding Secretary's appointments at the close of the fiscal year.

On June 30, 1911, there were 65 appointees in the Washington office and 165 at the Pittsburgh experiment station and at various other points in the field, as compared with 40 in the Washington office and 84 in the field on July 1, 1910.

The total number of changes in status during the year, including appointments, separations, promotions, extensions, etc., aggregated 790.

In addition to the regular force, there were employed in the field, on bureau agreements from time to time, 163 different laborers, 95 of whom have been separated from the service, and 68 of whom remained on duty at the close of the fiscal year. As these laborers are employed at irregular intervals, the total number of different laborers does not represent the number of agreements entered into, which aggregates 251.

The entire force of the Bureau of Mines at the close of the fiscal year consisted of 298 employees.

Leave of absence was granted to the 322 employees holding Secretary's appointments, as summarized below:

Annual leave, 2,446 days, or about 25 per cent of the total amount allowed by law; sick leave, 444 days, or about 5 per cent of the total amount allowed by law. In addition, 1,025 days of leave without pay, 2 days' military leave, and 8 days' furlough were granted.

## PUBLICATIONS.

The publications of the Bureau of Mines are divided into three classes—bulletins, technical papers, and miners' circulars. The bulletins and technical papers are as a rule technical in character and contain the results of investigations by the bureau. The miners' circulars are written in nontechnical English and deal with subjects relating to sanitation, mine safety, and other matters of general interest among men actually engaged in mining, quarrying, and metallurgical work.

The publications for the fiscal year ended June 30, 1911, are briefly summarized below:

### BULLETINS.

Bulletin 1. The Volatile Matter of Coal, by H. C. Porter and F. K. Ovitz, 56 pp., 1 pl., 9 text figures.

A short account of an investigation of the composition of the volatile matter in several typical American coals and the amount of this matter given off at different temperatures of volatilization.

Bulletin 2. North Dakota Lignite as a Fuel for Power-Plant Boilers, by D. T. Randall and Henry Kreisinger, 42 pp., 1 pl., 7 text figures.

A description of a series of steaming tests of lignite at Williston, N. Dak., in a boiler plant having furnaces of special design. The tests showed that lignite could be used in such furnaces with fair economy.

Bulletin 3. The Coke Industry of the United States as Related to the Foundry, by Richard Moldenke, 32 pp.

Calls attention to the waste in coke making, points out how coke can be used to best advantage in foundry melting, and suggests improvements on present cupola practice.

Bulletin 4. Features of Producer-Gas Power-Plant Development in Europe, by R. H. Fernald, 27 pp., 4 pls., 7 text figures.

Briefly summarizes the salient features of producer-gas power-plant development in Europe, with particular reference to the use of low-grade coal, lignite, and peat as producer fuels.

Bulletin 5. Washing and Coking Tests of Coal at the Fuel-Testing Plant, Dnever, Colo., July 1, 1908, to June 30, 1909, by A. W. Belden, G. R. Delamater, J. W. Groves, and K. M. Way, 62 pp., 1 text figure.

Describes the samples of coal tested, the methods of testing, and the results of the tests. Most of the samples were from coal fields in the Rocky Mountain province.

Bulletin 7. Essential Factors in the Formation of Producer Gas, by J. K. Clement, L. H. Adams, and C. N. Haskins, 58 pp., 1 pl., 16 text figures.

Describes laboratory experiments bearing on the rate of formation of carbon monoxide from carbon dioxide at high temperatures and discusses the physicochemical principles involved; also treats of laboratory experiments undertaken to determine the influence of temperature on the rate of formation and the composition of water gas. Indicates how the results of the tests apply to the operation of boiler furnaces and gas producers.

Bulletin 8. The Flow of Heat Through Furnace Walls, by W. T. Ray and Henry Kreisinger, 32 pp., 19 text figures.

Describes some experiments with a specially constructed furnace which show that a furnace wall with an air space offers less resistance to heat flow than a solid wall of the same thickness. Discusses the laws of heat transmission.

Bulletin 9. The Recent Development of the Producer-Gas Power Plant in the United States, by R. H. Fernald, 82 pp., 2 pls., 3 text figures.

Discusses the status of producer-gas power plants, gives opinions of owners on the efficiency of such plants, presents observations on conditions at 69 plants, and gives a list of installations in the United States. Reprint of United States Geological Survey Bulletin 416.

Bulletin 11. The Purchase of Coal by the Government Under Specifications, with Analyses of Coal Delivered for the Fiscal Year 1908-9, by G. S. Pope, 80 pp.

Describes the Government's plan of purchasing coal under specifications and the methods of sampling and testing; gives the form of specification used and many analyses of coals. Reprint of United States Geological Survey Bulletin 428.

Bulletin 12. Apparatus and Methods for the Sampling and Analysis of Furnace Gases, by J. C. W. Frazer and E. J. Hoffman, 22 pp., 6 text figures.

Describes methods of taking "continuous" and "instantaneous" samples and the apparatus designed by the writers for such sampling.

Bulletin 14. Briquetting Tests of Lignite at Pittsburgh, Pa., 1908-9, with a Chapter on Sulphite-Pitch Binder, by C. L. Wright, 64 pp., 11 pls., 4 text figures.

Contains descriptions of the lignites tested and of the briquetting plant and its operation, gives results of the tests, and presents a statement of the probable cost of briquetting lignite on a commercial scale.

## TECHNICAL PAPERS.

Technical Paper 1. The Sampling of Coal in the Mine, by J. A. Holmes, 18 pp., 1 text figure.

Describes the sampling methods and the sampling outfit devised by the United States Geological Survey and the Bureau of Mines.

Technical Paper 2. The Escape of Gas from Coal, by H. C. Porter and F. K. Ovitz, 14 pp., 1 text figure.

A report of the results of an investigation of the rate of escape of gas from several coals while kept in bottles. Discusses the condition of gas in coal and the significance of the results of the experiments as related to mine ventilation and the storage of coal.

Technical Paper 3. Specifications for the Purchase of Fuel Oil for the Government, with Directions for Sampling Oil and Natural Gas, by I. C. Allen, 13 pp.

Calls attention to the need of specifications for the purchase of fuel oil, and gives the specifications prepared by the Bureau of Mines and the methods of sampling used by the bureau.

Technical Paper 4. The Electrical Section of the Bureau of Mines, its Purpose and Equipment, by H. H. Clark, 12 pp.

Briefly describes the equipment at the Pittsburgh experiment station for testing electrical mining machinery, and some of the tests that have been made.

## MINERS' CIRCULARS.

Miners' Circular 2. Permissible Explosives Tested Prior to January 1, 1911, and Precautions to be Taken in Their Use, by Clarence Hall, 12 pp.

States the tests to which the Bureau of Mines subjects explosives to determine their permissibility for use in gaseous or dusty coal mines, names the explosives that passed the tests, and gives some precautions to be observed in using explosives.

Miners' Circular 3. Coal-Dust Explosions, by G. S. Rice, 22 pp.

Calls attention to the ways in which coal dust is formed in mining operations, the manner in which coal-dust explosions originate and are propagated, and summarizes the means by which such explosions may be prevented.

### EDITORIAL WORK.

The publications issued, the contents of which have been summarized, consisted of 12 bulletins, including two reprints of United States Geological Survey bulletins dealing with investigations that have been transferred to the Bureau of Mines, four technical papers, and two miners' circulars. These publications were: Bulletins 1, 2, 3, 4, 5, 7, 8, 9 (reprint), 11 (reprint), 12, and 14; Technical Papers 1, 2, 3, and 4; Miners' Circulars 2 and 3.. In addition to these regular classes of reports there were issued four lists of publications and one schedule of prices to be charged by the bureau for testing explosives.

During the year, 4,630 pages of manuscript were prepared for printing and 250 galley proofs and 1,100 page proofs were read and corrected.

In addition to editing the text of all publications, the editorial section examined all material submitted for illustrations and had the accepted material prepared for engraving. During the year, 620 illustrations were examined, nearly all of which were transmitted for reproduction in reports. These reports included 20 bulletins, 2 technical papers, and 1 miners' circular.

About 500 proofs of illustrations were received from the Government Printing Office. These were carefully examined and compared with the originals.

The work of redrawing or relettering diagrams and charts and of retouching photographs took about half the time of one draftsman; this work was done under the direction of the editor, who determined the size of the illustrations, their character (whether text figures or plates), and the process (zinc etching, wax engraving, etc.) to be used in reproducing them.

The editorial work was in charge of S. Sanford, assistant engineer.

### DISTRIBUTION OF DOCUMENTS.

With the transfer of the personnel and property of the technologic branch of the United States Geological Survey to the Bureau of Mines there were transferred approximately 15,000 bulletins that had been issued by this branch. Most of these Geological Survey bulletins were distributed during the year.

Altogether the Bureau of Mines distributed 110,504 publications, including 22,807 Bureau of Mines bulletins, 69,329 miners' circulars, 5,155 technical papers, and 13,213 Geological Survey bulletins.

In the year, 21,113 letters were received requesting publications, and 5,014 letters were written in answer.

During the year, 2,882 requests were made for bulletins which were out of stock. In each instance the writers were referred to the superintendent of documents, who sells these publications at nominal prices.

A number of the technologic publications that were originally issued by the Geological Survey have been reprinted as Bureau of Mines bulletins, and the indications are that in the next fiscal year there will be fewer requests for "out of stock" publications.

During the year exchange agreements were perfected with foreign and domestic mining bureaus or departments, mining and technical libraries, and periodicals. Through such arrangements the publications of the Bureau of Mines are sent these bureaus or societies in exchange for the publications which they issue. In this way the Bureau of Mines obtains more than 150 of the foremost mining and technical papers of the world without cost other than that of sending the Bureau of Mines publications.

An economical and satisfactory system for the distribution of documents has been put in operation. The main feature of this system is the issuance of monthly post cards notifying interested persons that publications have been issued. The list of such persons now includes more than 11,000 names.

The distribution of documents and correspondence relating thereto is in charge of J. L. Cochrane. Two junior clerks, two under clerks, and one copyist are employed as assistants in this work.

### LIBRARY.

A scientific library was begun during the year to meet the needs of the administrative office in Washington and of the experiment station in Pittsburgh, and though it is small, a good beginning has been made. There are in the library more than 4,000 volumes of technical books, periodicals, reference books, and scientific works that are of daily use to the employees of the bureau.

The headquarters of the library are in Washington, where the principal reference books are maintained and the cataloguing is done. The technical books, for the most part, go to the experiment station in Pittsburgh, where they are most needed. Of the 4,000 volumes in the entire library more than half are now at Pittsburgh. All new books obtained, whether by exchange, purchase, or gift, are delivered to the administrative office in Washington, and are sent to Pittsburgh if such action is considered desirable. The library is now receiving through exchange agreements more than 150 of the leading technical periodicals devoted to mining and fuel investigations.

The library in Washington is in charge of a library clerk; at the Pittsburgh station the books are in charge of a translator, who gives only part time to their care.

## HISTORY OF TECHNOLOGIC INVESTIGATIONS TRANSFERRED TO THE BUREAU OF MINES.

Certain technologic investigations in relation to mining were carried on by the Geological Survey for several years prior to the establishment of the Bureau of Mines. In view of the fact that much of this work was by law transferred to the Bureau of Mines for continuance, a brief historical sketch is incorporated in this report, in order that the scope of the preceding work may be clearly understood.

### FUEL INVESTIGATIONS.

The analysis and testing of mineral fuels now being carried on by the bureau had its beginning in two acts of Congress, passed early in 1904, which provided for analyzing and testing the coals and lignites of the United States at the Louisiana Purchase Exposition, in St. Louis, Mo., during 1904, under the supervision of the Director of the United States Geological Survey. To carry out the purpose of these two acts, each of which carried an appropriation for the work, Director C. D. Walcott of the Survey appointed a committee consisting of E. W. Parker, M. R. Campbell, and J. A. Holmes, and assigned to this committee the supervision of the investigations.

Subsequent appropriations were made by Congress for the continuance of this work, and early in 1905 the committee's supervision of these investigations was discontinued and the work placed under the direction of J. A. Holmes, as expert in charge. The work done at the plant both during 1904 and subsequently included chemical analyses and the testing of various coals in boiler furnaces, gas producers, coke ovens, cupola furnaces, briquet presses, etc.

The fuel-testing plant remained in Forest Park, St. Louis, until early in 1907, when the closing out of the affairs of the Louisiana Purchase Exposition necessitated the removal of the buildings from these grounds. At that time the Jamestown Exposition at Norfolk was approaching completion; the exposition authorities offered, free of charge, the use of buildings and other facilities, and the railways offered to transport from St. Louis to Norfolk, free of charge, all the necessary machinery and other equipment.

Meanwhile a cooperative arrangement having been entered upon between the Departments of the Interior and the Navy relative to the testing of coals suitable for naval purposes, both run-of-mine and briquetted coals, it was decided to transfer and operate at Norfolk, Va., all of the fuel-testing equipment except that for coking and washing tests. This was moved to and erected at Denver, Colo., for use in testing the coals of the Rocky Mountain States, especially those in lands belonging to the Government. At Norfolk, steaming and briquetting tests were made of the coals that reach the Atlantic seaboard for the use of the Navy and the merchant marine; at Denver the investigations related to the possibilities of producing high-grade metallurgical coke from the coals of the Rocky Mountain region, particularly those on the public lands.

Meanwhile, for convenience in analyzing fuels reaching the testing plants from all parts of the country, chemical laboratories were temporarily operated in Columbus, Ohio, Pittsburgh, Pa., Norfolk, Va., Denver, Colo., and Washington, D. C., the last being for special analyses of fuels purchased for the Government.

After the close of the Jamestown Exposition an arrangement was made with the War Department for the temporary occupation of the United States buildings on the arsenal grounds at Pittsburgh, Pa. The investigations at Denver were discontinued on June 30, 1909, because of a large reduction in the appropriation.

## STRUCTURAL-MATERIALS INVESTIGATIONS.

The investigation of structural materials in St. Louis was authorized under the sundry civil appropriations act of March 3, 1905, and the deficiency appropriation act of the same date, and was enlarged and continued by appropriations for the fiscal years ended 1907, 1908, 1909, and 1910. This work was a continuation of the investigations of cement materials, building stone, and clays, which had been carried on by the United States Geological Survey to a limited extent for a number of years. Its beginnings in the form here described were stimulated by the cement-testing work that was carried on at St. Louis, Mo., as one of the operating exhibits of the Louisiana Purchase Exposition installed and supported by the Association of American Portland Cement Manufacturers.

Through the courtesy and cooperation of the Louisiana Purchase Exposition Co. and the city of St. Louis the investigations of fuels and structural materials were continued on the exposition grounds during 1905 and 1906, and the structural-materials investigations continued at the same place through the courtesy of the authorities of the city of St. Louis during 1908. The work carried on included investigations into materials such as were needed for use by the Government in its buildings and engineering construction work, how these materials could be used most efficiently under different conditions, their fire-resisting qualities, the value of protective coatings, the utilization of cement materials, the testing of concrete and reinforced-concrete structural forms, and the testing of clays and clay products.

In 1909, owing to the necessity of removing the few remaining buildings from the Exposition grounds, these grounds being transferred to the city of St. Louis as a part of the public park, and the inability of the United States Geological Survey to obtain other suitable quarters for the work in St. Louis, the investigations were transferred to the Government buildings available for them on the tract at Pittsburgh, where the investigations of fuels and mine accidents were already under way.

## FORMATION OF THE TECHNOLOGIC BRANCH, GEOLOGICAL SURVEY.

In the spring of 1907 the two lines of investigations described above—testing fuels and testing structural materials—were combined into two corresponding divisions, the fuel division and the structural-materials division of the United States Geological Survey. By an order of the Secretary of the Interior, dated April 2, 1907, these two divisions were incorporated into a new branch of that organization, designated the Technologic Branch of the United States Geological Survey, with J. A. Holmes as expert in charge, and H. M. Wilson as chief engineer.

## NATIONAL ADVISORY BOARD.

Early in 1905 the Secretary of the Interior, James R. Garfield, extended an invitation to various national societies to send representatives to advise the Geological Survey concerning the investigation of fuels and structural materials.

In response to this invitation a meeting was held in Washington, D. C., June 3, 1905, in the office of the Director of the United States Geological Survey. Later the personnel of this board was slightly changed, and in March, 1906, the members received direct appointments from the President, Theodore Roosevelt. In addition, a representative was appointed from each of the several Government bureaus interested in the investigations.

The original advisory board consisted of the following representatives of various national societies and Government bureaus:

The American Institute of Mining Engineers: John Hays Hammond, past president, New York; Robert W. Hunt (Robert W. Hunt & Co., testing engineers, Chicago, Pittsburgh, and New York) Chicago, Ill.; B. F. Bush, manager and vice president, Western Coal & Mining Co., St. Louis, Mo.

The American Institute of Electrical Engineers: Francis B. Crocker, professor of electrical engineering, Columbia University, New York; Henry C. Stott, superintendent of motive power, Interborough Rapid Transit Co., New York.

The American Society of Civil Engineers: C. C. Schneider, past president, chairman committee on concrete and reinforced concrete, Philadelphia, Pa.; George S. Webster, chairman committee on uniform tests of cement, city engineer, Philadelphia, Pa.

The American Society of Mechanical Engineers: W. F. M. Goss, dean of the School of Engineering, University of Illinois, Urbana, Ill.; George H. Barrus, steam engineer, Boston, Mass.; P. W. Gates, Chicago, Ill.

The American Society for Testing Materials: Charles B. Dudley, president, Altoona, Pa.; Robert W. Lesley, vice president, Philadelphia, Pa.

The American Institute of Architects: George B. Post, past president, New York; William S. Eames, past president, St. Louis, Mo.

The American Railway Engineering and Maintenance of Way Association: H. G. Kelley, past president, Minneapolis, Minn.; Julius Kruttschnitt, director of maintenance and operation, Union Pacific Railroad, Chicago, Ill.; Hunter McDonald, past president, chief engineer Nashville, Chattanooga & St. Louis Railroad, Nashville, Tenn.

The American Railway Master Mechanics' Association: J. F. Deems, general superintendent of motive power, New York Central Lines, New York; A. W. Gibbs, general superintendent of motive power, Pennsylvania Railroad, Altoona, Pa.

The American Foundrymen's Association: Richard Moldenke, secretary, Watchung, N. J.

The Association of American Portland Cement Manufacturers: John B. Lober, president, Philadelphia, Pa.

The Geological Society of America: Samuel Calvin, professor of geology, University of Iowa, Iowa City, Iowa; I. C. White, State geologist, Morgantown, W. Va.

The Iron and Steel Institute: Julian Kennedy, metallurgical engineer, Pittsburgh, Pa.; C. S. Robinson, vice president, Youngstown Sheet and Tube Co., Youngstown, Ohio.

The National Association of Cement Users: Richard L. Humphrey, president, Philadelphia, Pa.

The National Board of Fire Underwriters: Charles A. Hexamer, chairman board of consulting experts, Philadelphia, Pa.

The National Fire Protective Association: E. U. Crosby, Philadelphia, Pa.

The National Brick Manufacturers' Association: John W. Sibley, treasurer, Sibley-Menge Press Brick Co., Birmingham, Ala.; William D. Gates, American Terra Cotta and Ceramic Co., Chicago, Ill.

The National Lumber Manufacturers' Association: Nelson W. McLeod, past president, St. Louis, Mo.; John L. Kaul, president Southern Lumber Manufacturers' Association, Birmingham, Ala.

The Corps of Engineers, U. S. Army: Lieut. Col. William L. Marshall, New York.

The Isthmian Canal Commission: Lieut. Col. O. H. Ernst, Washington, D. C., and later Lieut. Col. George W. Goethals, chief engineer and chairman of the commission.

The Bureau of Yards and Docks, U. S. Navy: Lieut. Frank T. Chambers, civil engineers, Washington, D. C.

The Supervising Architect's Office, U. S. Treasury Department: James K. Taylor, supervising architect, Washington. D. C.

The Reclamation Service, U. S. Interior Department: F. H. Newell, director, Washington, D. C.

Subsequently the following additional appointments were made:

The Bureau of Ordnance, U. S. Army: Brig. Gen. William Crozier, chief, Washington, D. C.

The Bureau of Steam Engineering, U. S. Navy: Rear Admiral Charles W. Rae, chief, Washington, D. C.

Quartermaster's Department of the Army: Brig. Gen. James B. Aleshire.

This board was formally organized in Washington, D. C., March 31, 1906, with Dr. Charles B. Dudley as president and Richard L. Humphrey as secretary. The board, with a few changes due to resignation or other causes, continued to meet semiannually until it was legislated out of existence by an item in the sundry civil appropriation bill for the fiscal year 1910.

The appointment of this advisory board grew out of the wish on the part of the President (Theodore Roosevelt), the Secretary of the Interior (Mr. Garfield), and the Director of the Geological Survey (Mr. Walcott) that the appropriations for these investigations should be expended in a manner most beneficial to the several branches of the Government service, without duplication of work well done elsewhere, and that the investigations should also be conducted in such manner as to make the results of the greatest possible benefit to the general public. Every one familiar with the meetings of this board and their relations to the general engineering and construction work of the Government recognizes and appreciates the great resulting benefit to the Government service. The board was made up of men of large affairs and experience, each prominent in his profession, and each willing to render this public service without any thought of personal gain or compensation. It was in a high degree unfortunate that the Government could not have continued to avail itself of a service so valuable and disinterested and available in no other practicable way.

The purpose and plans of the Bureau of Mines have largely followed the recommendations of the advisory board, except in so far as these plans relate more specifically to the mining, metallurgical, and kindred investigations which are the outgrowth of subsequent legislation.

## MINE-ACCIDENTS INVESTIGATIONS.

A series of disastrous coal-mine explosions late in 1907 having caused widespread discussion as to the loss of life in mines, Congress, by an item in the legislative appropriation act of May 22, 1908, authorized an investigation as to the causes of mine explosions, with a view to increasing safety in mining. A similar appropriation was carried by the act providing for the sundry civil expenses of the Government for 1910.

Immediately after the passage of the act of May 22, 1908, the mine-accidents division of the technologic branch was organized. Investigation having shown that one of the chief causes of coal-mine explosions in this country was the use of unsafe explosives, the necessary steps for the establishment of a suitable station for the testing of explosives were taken as soon as the appropriation carried by the act became available. This station, fully equipped for determining the properties of different explosives, with particular reference to use in dusty or gaseous mines, was established in the old arsenal building and grounds in Pittsburgh, Pa., and was formally opened in November, 1908. As an outcome of the investigations then authorized the explosives that satisfactorily passed certain tests were designated as "permissible explosives," if used under certain prescribed conditions, and their names were given in a published list. The first list of such explosives was published in 1909.

In addition to investigations at this Pittsburgh station of explosives, mine gases, and dusts, and investigations of electrical equipment and other possible causes of mine explosions, investigations were also made in mines within which explosions had occurred.

In an endeavor to reduce loss of life in rescue operations after mine disasters, and to promote safer methods of fighting mine fires, recovering mines, or rescuing the victims of fires and explosions, an investigation was undertaken of various types of mine-rescue apparatus and of mine-rescue work in general.

## PITTSBURGH EXPERIMENT STATION.

At the annual meeting of the advisory board, held in Norfolk in October, 1907, the advisability of securing a temporary home for the fuels and structural-materials investigations was referred to the executive committee by the Director of the Geological Survey. For several months thereafter the question of appropriations for the continuance of work then pending in Congress introduced many uncertainties and delayed selection.

During this period several proposed sites at each of several cities were considered by a committee of the board as to their suitability for the site of a new experiment station for the continuance of these investigations. The question of the authority of the Survey to accept such site having been raised, an opinion was asked of the Assistant Attorney General for the Interior Department, who decided that the department had no authority to purchase a site for the permanent location of testing laboratories or to accept a site or buildings without specific authority from Congress.

The attention of officers of the Geological Survey having been called to certain vacant buildings on the old arsenal tract at Pittsburgh, Pa., only a portion of which were actually in use as a supply depot by the Quartermaster's Department of the Army, authority to occupy a part of the buildings and grounds was granted through the Secretary of War, and the equipment used in both the fuel investigations at Norfolk and the structural-materials investigations at St. Louis, Mo., were transferred to Pittsburgh, Pa. The large number of coal mines within a radius of 150 miles of Pittsburgh marks the location as particularly appropriate. The initiatory steps in the formal negotiations as completed are shown in the following correspondence:

*The Secretary of the Interior to the Secretary of War.*

DEPARTMENT OF THE INTERIOR,
*Washington, June 2, 1908.*

The honorable the SECRETARY OF WAR:

SIR: Congress has authorized the Department of the Interior, through its Geological Survey, to conduct certain technologic investigations looking to the prevention of mine disasters and the more efficient use of the fuels and building materials of the country; but it has failed to make adequate provision for the securing of grounds and buildings for use in connection with these investigations, and has also failed to grant to the Department of the Interior such authority as would enable it to accept a site and buildings which were offered as a means of cooperation in these important investigations, a site and buildings already owned by the Government. I am informed that under the control of the Quartermaster General of the Army there are in the city of Pittsburgh, on the Government reservation known as the Pittsburgh Supply Depot, several brick buildings which are not now used or needed for the purposes of the Quartermaster General's office, and that with slight alterations these buildings would be immediately available for use in conducting such investigations as the Department of the Interior is authorized to carry on.

If this information is correct, I would respectfully ask that you authorize a temporary transfer of these buildings and adjacent grounds to the Department of the Interior for use in carrying on these investigations; with the understanding that when they again become necessary to the work of the War Department the buildings will revert to its control.

In view of the importance of such investigations and the great interest which the entire country at the present time is showing in this matter of safeguarding the lives of miners, I beg to assure you that your favorable action in this matter will be most highly and generally appreciated.

Very respectfully,

(Signed) JAMES RUDOLPH GARFIELD,
*Secretary.*

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*Reply to the Secretary of War.*

WAR DEPARTMENT,
*Washington, June 8, 1908.*

SIR: Referring to your letter of the 2d instant, requesting, for reasons stated, the temporary transfer to the Department of the Interior of certain buildings on the Government reservation known as the Pittsburgh Supply Depot, now under the control of the Quartermaster's Department of the Army, for use in certain investigations relative to the prevention of mine disasters, etc., I beg to inform you that the Quartermaster General reports that steps will be taken to transfer the necessary buildings as requested.

Very respectfully,

(Signed) ROBERT SHAW OLIVER,
*Assistant Secretary of War.*

The honorable the SECRETARY OF THE INTERIOR.

### ESTABLISHMENT AT PITTSBURGH.

In subsequent correspondence provision was made whereby the use of certain buildings and grounds near the lower (northwest) end of the arsenal tract, below the parade grounds, were temporarily transferred to the Interior Department. The transfer included also the upper floor and half of the lower floor of building No. 21, which is located at the lower end of the other division of the arsenal tract above Butler Street, and adjoins that portion of the tract which had been transferred to the city of Pittsburgh. The transfer stipulates that the buildings and grounds transferred to the Department of the Interior shall be returned to the War Department on demand, and that no additional buildings shall be constructed upon these grounds without approval of the plans by the Secretary of War.

By the authorization of the Secretary of the Interior, the Geological Survey proceeded, under acts making appropriations for the fiscal year beginning July 1, 1908, to use the facilities thus offered not only as a testing station for the mine-accidents investigations but also as a temporary site for the fuel investigations and for such structural-materials tests as were not already under way at St. Louis.

On July 1, 1910, the investigation of structural materials formerly transferred to the Bureau of Mines, was by a clause in the sundry civil appropriation act transferred to the Bureau of Standards of the Department of Commerce and Labor, as was stated above.

It is evident from the above statement that the present location in the city of Pittsburgh of the principal testing station of the Bureau of Mines was not the outcome of a definite, permanent plan, but was the result of the force of circumstances, under which the important work that had theretofore been housed in the St. Louis and Jamestown Expositions was continued in some temporary location pending such time as Congress would make suitable provision for its permanent location and housing.

## MINE-SAFETY STATIONS.

In order to facilitate field investigation of mine explosions, and in particular to provide means whereby the engineer engaged in these investigations could enter a mine in which a disaster had occurred while the mine was still full of poisonous or explosive gases and the evidences of a disaster were still fresh, it was decided to establish in addition to the main station at Pittsburgh branch stations equipped with rescue apparatus in the various coal fields. The first of these stations was established, in cooperation with the State Geological Survey, at Urbana, Ill., in 1908, the second at Knoxville, Tenn., in 1909, and the third at Seattle, Wash., in the same year. In response to the Senate resolution of December 16, 1909, asking for information as to the cost of establishing and operating stations essential to the proper safeguarding of life which should be established in the coal fields, the Secretary of the Interior, on December 20, recommended the establishment of nine additional stations and gave an estimate of the cost of their equipment and maintenance.[a]

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[a] S. Doc. No. 226, 61st Cong., 2d sess.

# REPORT OF THE GOVERNMENT HOSPITAL FOR THE INSANE.

# OFFICERS OF THE HOSPITAL.

## BOARD OF VISITORS.

Brig. Gen. Geo. M. Sternberg, U. S. A.,
*President of the Board.*
G. Lloyd Magruder, M. D.
Mrs. Henry G. Sharpe.
Mr. Scott C. Bone.[1]
Miss Bessie J. Kibbey.
Walter Wyman, M. D.,
*Surgeon General, P. H. and M. H. S.*
Rev. John M. Schick, D. D.
Dr. Charles F. Stokes, Surgeon General, U. S. N.
Brig. Gen. Geo. H. Torney, Surgeon General, U. S. A.

### Executive Committee of the Board.

Dr. Sternberg, Mrs. Sharpe, Mr. Schick.

### Chaplains.

Rev. C. H. Butler.
Rev. W. G. Davenport.
Rev. C. M. Bart.
Rev. Hugh T. Stevenson.
Rev. Geo. M. Cummings.

## MEDICAL STAFF.

### Superintendent.

William A. White, M. D.

### First Assistant Physician.

Geo. H. Schwinn, M. D.

### Assistant Physicians.

Mary O'Malley, M. D.
Alfred Glascock, M. D.
William H. Hough, M. D.
Nicholas J. Dynan, M. D.
Bernard Glueck, M. D.

### Junior Assistant Physicians.

Myer Solomon, M. D.
Eva C. Reid, M. D.
Rose Alexander, M. D.[2]
M. Edith Conser, M. D.
Harry Sicherman, M. D.[2]
Paul E. Bowers, M. D.[2]
Francis M. Barnes, Jr., M. D.
John H. Thorne, M. D.

### Medical Internes.

Isaac N. Kelly, M. D.[2]
James J. Loughran, M. D.
Halbert Robinson, M. D.
Hyman Laveson, M. D.

### Pathologist.

I. W. Blackburn, M. D.[3]

### Histopathologist.

Gonzalo R. Lafora.

### Scientific Director.

S. I. Franz, A. B., Ph. D.

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[1] Term expired June 30, 1911; succeeded by John W. Yerkes.
[2] Resigned.
[3] Dead.

### Assistant in Psychology.

Miss Grace H. Kent, Ph. D.

### Visiting Dentist.

A. D. Weakley, D. D. S.

### Dental Interne.

Charles R. Irby, D. D. S.

### Visiting Ophthalmologist.

Arthur H. Kimball,

### Veterinarian.

John P. Turner, V. D. M.

### Steward and Disbursing Agent.

Monie Sanger.

### Chief Clerk.

Frank M. Finotti.

### Purchasing Agent.

A. E. Offutt.

### Matron.

H. O'Brien.

### Chief of Training School.

Josephine I. Stransky, M. D.

## CONSULTING STAFF.

### Internal Medicine.

Dr. S. S. Adams.
Dr. G. W. Cook.
Dr. Sterling Ruffin.
Dr. James D. Morgan.

### General Surgery.

Lieut. Col. Wm. H. Arthur, U. S. A.
Dr. G. T. Vaughn.
Dr. W. P. Carr.

### Gynæcology.

Dr. Joseph Taber Johnson.
Dr. H. L. E. Johnson.
Dr. J. W. Bovée.
Dr. I. S. Stone.

### Ophthalmology.

Dr. D. K. Shute.
Dr. W. K. Butler.

### Laryngology.

Dr. C. W. Richardson.
Dr. J. J. Richardson.
Dr. W. A. Wells.
Dr. F. T. Chamberlin.

### Genito-urinary Diseases.

Dr. E. F. King.
Dr. Wallace Neff.

### Medical Zoology.

Dr. C. W. Stiles.
Dr. Thomas A. Claytor.

### Bacteriology.

Dr. H. D. Giddings.

# REPORT OF THE GOVERNMENT HOSPITAL FOR THE INSANE.

WASHINGTON, D. C., *July 1, 1911.*

SIR: The Board of Visitors for the Government Hospital for the Insane have the honor to submit the fifty-sixth annual report of the hospital, consisting of the report of the superintendent for the fiscal year ended June 30, 1911, and his recommendations.

Respectfully,

GEO. M. STERNBERG,
*President of the Board of Visitors.*
WM. A. WHITE, M. D.
*Superintendent, Secretary of the Board ex officio.*

The SECRETARY OF THE INTERIOR.

## REPORT OF THE SUPERINTENDENT.

### MOVEMENTS OF POPULATION.

On June 30, 1911, there were remaining in the hospital 2,862 patients, as against 2,916 remaining on June 30, 1910, a decrease of 54 over the previous year. There were admitted during the year 623 patients, a decrease of 27 over the previous year. The total number of patients under treatment during the year, however, was 3,539, or an increase of 37 over the previous year. The number of discharges, including deaths, during the year was 677, an increase of 91 over the previous year. The daily average population for the year was 2,884, as against 2,872.91 for the previous year, thus showing an increase of 11.09.

The decrease in the number of admissions and the increase in the number of discharges during the past year are due to various causes, in the main as follows: There have been increased facilities for caring for the insane of the District of Columbia at the Washington Asylum Hospital, with the result that patients, instead of being immediately transferred from station houses to this hospital, are invariably sent to the Washington Asylum Hospital for observation and mental examination. The net result of this method of procedure is a great deal more care in the matter of commitment, and many patients are either discharged without commitment, perhaps to the care of their friends, or their condition is recognized as acute and they are permitted to stay there until they recover.

The Army and the Navy have recently taken somewhat different attitudes toward the commitment of enlisted men, and the tendency now is to commit to the Government Hospital for the Insane only men who have mental disorder acquired in line of duty, and to return to their home States such men as develop mental disorder incident to conditions antedating their enlistment.

The District authorities, too, have been unusually active during the past year in removing patients from the hospital, for the most part deporting them to their home States. The Board of Charities has removed 76 patients in this way from the hospital during the past year.

While there has been a falling off in admissions and an increase in discharges during the past year, which has kept the hospital population from its usual increase, still it will be appreciated that such a stationary condition of the census as has maintained can not be expected to continue. A change in policy such as indicated above may produce a temporary falling off in admissions, but such a falling off can necessarily only be relative. When it is taken into consideration that the population of the District of Columbia is increasing at the rate of nearly 10,000 per annum, and that the personnel of the Army and Navy is continuing to increase, and very possibly may materially increase in the next few years, it will be seen that while the population of the hospital may have remained practically stationary during the past year, it can not be expected to do so in the future.

*Movement of population, fiscal year ended June 30, 1911.*

| | Male. | Female. | Total, |
|---|---|---|---|
| Remaining June 30, 1910 | 2,193 | 723 | 2,916 |
| Admitted during the fiscal year, June 30, 1911 | 443 | 180 | 623 |
| Total number under treatment | 2,636 | 903 | 3,539 |
| Discharged: | | | |
| Recovered | 127 | 42 | 169 |
| Improved | 47 | 13 | 60 |
| Unimproved | 96 | 26 | 122 |
| Not insane | 38 | 8 | 46 |
| Died | 212 | 68 | 280 |
| Total | 520 | 157 | 677 |
| Remaining June 30, 1911 | 2,116 | 746 | 2,862 |

## ADMINISTRATIVE DEPARTMENT.

### OFFICE OF THE STEWARD AND DISBURSING AGENT.

*Farm and garden products raised during the year ended June 30, 1911.*

| | | |
|---|---|---|
| Apples: | | |
| Crab | bushels | 94 |
| Green | barrels | 262 |
| Beans: | | |
| Lima | bushels | 62 |
| String | barrels | 209 |
| Beets | bunches | 5, 670 |
| Do | bushels | 132 |
| Cabbage | heads | 6, 319 |
| Cabbage sprouts | barrels | 241 |
| Cantaloupes | | 9,753 |
| Carrots | bunches | 7, 312 |
| Do | bushels | 10 |
| Celery | bunches | 18, 138 |
| Cherries | quarts | 370 |
| Chickens | pounds | 1, 734 |
| Corn, green | ears | 10, 734 |
| Cucumbers | | 11, 367 |
| Currants, green | quarts | 80 |
| Ducks | pounds | 198 |
| Eggplant | | 442 |
| Eggs | dozen | 6, 915 |
| Figs | bushels | 9 |
| Grapes | pounds | 8, 770 |
| Honey | do | 245 |
| Kale | barrels | 698 |

*Farm and garden products raised during the year ended June 30, 1911*—Cont'd.

| | | |
|---|---|---|
| Lettuce | heads | 19,665 |
| Milk | gallons | 104,395 |
| Onions: | | |
| Dried | barrels | 9 |
| Green | bunches | 41,756 |
| Cowpeas | tons | 129 |
| Oyster plant | | 3,875 |
| Parsley | bunches | 15,842 |
| Parsnips | barrels | 109 |
| Peaches | bushels | 9 |
| Pears | do | 506 |
| Peas | do | 73 |
| Peppers | do | 132 |
| Plums | do | 63 |
| Potatoes: | | |
| Irish | do | 468 |
| Sweet | do | 1,021 |
| Pork, fresh | pounds | 27,660 |
| Pumpkins | | 1,787 |
| Radishes | bunches | 11,200 |
| Rhubarb | do | 500 |
| Spinach | barrels | 25 |
| Squash | | 14,512 |
| Tomatoes | bushels | 1,200 |
| Turnips | do | 996 |
| Watermelons | | 1,488 |
| Corn: | | |
| Green | tons | 351 |
| Ear | barrels | 84 |
| Shelled | bushels | 319 |
| Hay: | | |
| Oat | tons | 34 |
| Green clover | do | 74 |
| Orchard grass and clover, tons | | 14 |
| Timothy | tons | 22 |
| Green grass | do | 48 |
| Sweet-potato roots | bushels | 267 |

*Work done in mattress shop during the year ended June 30, 1911.*

| | | |
|---|---|---|
| Mattresses made and made over | | 1,132 |
| Mats made: | | |
| Drawn | | 56 |
| Braided | | 207 |
| Husk | | 11 |
| Pillows made and made over | | 1,215 |
| Hair renovated | pounds | 26,600 |
| Clothing repaired | pieces | 706 |
| Hose repaired | pairs | 659 |

*Work of sewing and mending rooms during the year ended June 30, 1911.*

ARTICLES MANUFACTURED.

| | |
|---|---|
| Aprons: | |
| Barbers' | 3 |
| Denim | 2 |
| Dining room | 75 |
| Gingham | 237 |
| White | 949 |
| Bags: | |
| Clothes | 1 |
| Jelly | 10 |
| Bandages, canton flannel | 4 |
| Bibs | 66 |
| Blouses | 937 |
| Caps, rubber | 36 |
| Cases: | |
| Pillow | 3,805 |
| Pillow, rubber | 18 |
| Centerpieces | 8 |
| Chemise | 830 |
| Cloths: | |
| Table, long | 268 |
| Table, short | 228 |
| Coats: | |
| Boys' | 2 |
| Jean | 1,384 |
| Drilling | 36 |
| Overall | 594 |
| Covers: | |
| Bureau | 268 |
| Car | 32 |
| Corset | 5 |
| Couch | 5 |
| Cushion | 2 |
| Screen | 205 |
| Sideboard | 6 |
| Silkaline | 3 |
| Covers—Continued. | |
| Stand | 902 |
| Table | 3 |
| Table, billiard | 1 |
| Curtains: | |
| Holland | 905 |
| Rubber | 1 |
| Sash | 5 |
| Swiss | 99 |
| Drawers: | |
| Boys' | 12 |
| Canton flannel | 2,666 |
| Men's cotton | 14 |
| Women's cotton | 606 |
| Dresses: | |
| Denim | 135 |
| Gingham | 691 |
| Night, long | 212 |
| Night, short | 727 |
| Percale | 143 |
| Gowns, operating | 8 |
| Jackets: | |
| Boys' | 2 |
| Pneumonia | 6 |
| Pants: | |
| Boys' | 13 |
| Drilling | 24 |
| Jean | 1,621 |
| Outing flannel | 4 |
| Overall | 601 |
| Soldier | 950 |
| Petticoats: | |
| Cotton | 795 |
| Red flannel | 1 |
| Pads, saddle | 12 |

*Work of sewing and mending rooms during the year ended June 30, 1911*—Con.

ARTICLES MANUFACTURED—Continued.

| | |
|---|---|
| Sacques, percale | 3 |
| Sheets: | |
| Double | 48 |
| Single | 5,406 |
| Shirts: | |
| Boys' | 3 |
| Canton flannel | 2,214 |
| Check | 3,535 |
| Night | 964 |
| Outing flannel | 4 |
| Shirt waists: | |
| Boys' | 7 |
| Percale | 7 |
| Skirts: | |
| Denim | 14 |
| Gingham | 3 |
| Percale | 1 |
| Strainers, linen | 47 |
| Strops, razor | 6 |
| Ticks: | |
| Mattress, single | 392 |
| Mattress, double | 6 |
| Pillow | 296 |
| Towels: | |
| Bath | 2,729 |
| Roller | 1,642 |
| Tea | 1,667 |
| Tubs, canvas bath | 2 |
| Underhandkerchiefs | 322 |
| Vests, jean | 241 |
| Waists: | |
| Boys' | 4 |
| Denim | 3 |
| Percale | 2 |

REPAIRS AND MISCELLANEOUS WORK.

| | |
|---|---|
| Aprons made | 443 |
| Bags, laundry, made | 116 |
| Blankets hemmed | 1,723 |
| Burlap cut ... yards | 1,850 |
| Gloves made ... pairs | 74 |
| Miscellaneous repairs | 46,921 |
| Names sewed on | 10,897 |
| Napkins hemmed | 924 |
| Rugs bound | 249 |
| Rugs made | 5 |
| Suits cleaned and pressed | 60 |

WORK DONE FOR PATIENTS FROM FURNISHED MATERIAL.

| | |
|---|---|
| Drawers made ... pairs | 30 |
| Dresses made | 78 |
| Shirt waists made | 8 |

## WARD SERVICE.

*Oaks A building.*—During the year the porches about Oaks A building have been inclosed with glass on both floors, the walls painted, and heat supplied in such manner that it can be used as a dormitory for tubercular patients. These changes have increased the capacity of this building by 42 beds. In January the work was completed on Oaks A1, and 20 feeble and infirm patients were transferred to this ward. The work of inclosing the north porch of Oaks A2 was begun in February and completed in May.

*Allison C building.*—The porch of Allison C1 building has also been inclosed to increase the accommodation for tubercular patients and will shortly be in use.

*West lodge.*—A new dining room has been established on West lodge 1, owing to the large number of feeble patients located there who had difficulty in climbing the stairs from the general dining room.

*Howard hall.*—A floor has been laid in the attic over Howard hall 8 to increase the safety of housing dangerous criminals on this ward. Iron plates have been placed over the locks of doors and inside window guards have also been placed in this ward. Similar plates have been put on Howard hall 4. The work of strengthening the guards on all the windows of Howard hall is being proceeded with and will now be completed in a short time. Eight tool-proof guards will be installed, two in each of four wards on the first floor of the building. Peepholes have also been ordered for the doors to the various rooms, which will permit the attendants to observe the actions of the patients during the night and while in confinement. An additional attendant has been placed on day duty outside the building and an additional man put on night duty also outside the building. An additional attendant has also been placed in Howard hall 1, 4, and 8. The use of Howard hall basement as a storeroom for rags has been abolished, and the rags are now stored in a portion of the old boiler house, and much of the work that was done in the basement has been transferred to the mattress shop.

*B building.*—B2, formerly an open ward, has been changed to a hospital ward, thus bringing the bedridden patients downstairs, where it is much easier to serve their meals.

*Retreat building.*—Retreat 1, formerly used as a hospital ward, has been put to use, in connection with Retreat 2, in taking care of the more troublesome patients who are constantly trying to escape.

*Oak ward.*—The hospital patients formerly cared for on Retreat 1 have been transferred to Oak ward, which has been made a hospital ward and placed in charge of a female nurse, assisted by three female attendants.

*Training school for nurses.*—Twelve female and six male nurses graduated from the training school in June. Sixteen women and nine men were promoted from the junior class to the senior class of the training school.

*Staff conferences.*—During the year 705 cases have been brought into the staff conferences for consideration as to discharge, visit, opinion, and final diagnoses (death).

*Laundry.*—The Tobin hot-water heater has been moved from the old boiler house to the basement of the laundry, thus supplying the laundry with all the hot water needed.

The old wooden floor in the dry room of the laundry has been replaced by a concrete floor and the old dry rooms remodeled and made more fireproof.

*Grand stand.*—The grand stand at Poplar Spring, used for the Memorial Day exercises, was in such a dilapidated condition that it was necessary to build an entirely new stand, which was used on the last Memorial Day.

*Grading.*—The grading in the front and rear of Retreat building has been completed.

*Conduit.*—The vitrified conduit for the electric-light wires has been practically completed, with the exception of the run to the pump house and some short runs in the vicinity of the stable and greenhouses.

*Block pavements.*—Two hundred square yards of vitrified block pavement have been laid in the rear of the A building and about 544 square yards near the new extension to the bakery. One hundred and eighty-four square yards of asphalt block pavement have been relaid, 182 linear feet of curb reset, and 124 square yards of brick pavement relaid in the vicinity of the bakery extension.

*Concrete walks.*—Concrete walks have been laid to the entrance of A building and the side entrance of B building. A concrete walk has been laid between the benches in one of the greenhouses to replace an old board walk that had decayed.

*Patients' library.*—Additional stacks of books have been placed in the patients' library and about 200 additional volumes purchased. The circulation at present is about 800.

*Moving-picture machine.*—A moving-picture machine was purchased last summer and installed in Hitchcock hall. It has been used nearly every week through the winter and has afforded the patients a great deal of amusement.

*Bakery.*—The addition to the bakery has been completed, the new oven that was bought has been installed, and the old oven has been moved to a position adjacent to it. At present, with the two ovens, there is ample capacity for all the needs of the institution.

*New wiring.*—Throughout the year the work of rewiring the institution for the alternating current has been continuously in progress, and at the close of the fiscal year approximately two-thirds of the work is done. In the main, what remains is the detached group. Practically all of the conduit has been laid, and already considerable of the cable which is to be laid in this conduit has been contracted for.

*Transformers.*—Transformers for the new electric wires have all been delivered, and work is now in progress on three of the transforming houses in the rear of the administration building.

*New machinery.*—The following installations have been made at the power house: One Ames engine and General Electric 250-kilowatt alternating-current generator; one 450-kilowatt 2.200-volt alternating-current General Electric generator attached to one of the large McIntosh & Seymour engines; one General Electric alternating-current two-panel switchboard and five-panel distributing switchboard; one governor regulating device on the McIntosh & Seymour engine.

*Water supply.*—A 10-inch connection has been made with the new 20-inch District water main which has recently been extended up Nichols Avenue. This gives the hospital an additional source of water supply.

*Physical diseases treated during the year ended June 30, 1911.*

| | Male. | | | | Female. | | | | Total. |
|---|---|---|---|---|---|---|---|---|---|
| | White. | | Colored. | | White. | | Colored. | | |
| | Patient. | Employee. | Patient. | Employee. | Patient. | Employee. | Patient. | Employee. | |
| *General diseases.* | | | | | | | | | |
| Infectious diseases: | | | | | | | | | |
| Erysipelas | 8 | | | | 1 | 1 | 1 | | 11 |
| Gonorrhœa | 2 | | | | | | | | 2 |
| Influenza | 101 | 21 | 4 | 2 | 9 | 14 | 6 | | 157 |
| Malaria | 151 | 33 | 14 | 1 | 6 | 8 | 6 | | 219 |
| Measles | | 11 | | | | 5 | | | 16 |
| Parotitis, epidemic | | | | | 1 | 2 | | | 3 |
| Syphilis | 24 | | | | | 1 | 2 | | 27 |
| Tonsilitis | 31 | 24 | 3 | 1 | 8 | 5 | 1 | | 73 |
| Tuberculosis— | | | | | | | | | |
| Pulmonary | 13 | 2 | 4 | | 21 | 3 | 15 | | 58 |
| Lymphatic glands | | | 1 | | | | | | 1 |
| Other general diseases: | | | | | | | | | |
| Anæmia | 1 | | | | 2 | | | | 3 |
| Rheumatism | 31 | 5 | 5 | 1 | | 1 | | | 43 |

*Physical diseases treated during the year ended June 30, 1911*—Continued.

| | Male. | | | | Female. | | | | Total. |
|---|---|---|---|---|---|---|---|---|---|
| | White. | | Colored. | | White. | | Colored. | | |
| | Patient. | Employee. | Patient. | Employee. | Patient. | Employee. | Patient. | Employee. | |
| *Diseases of the nervous system and organs of special sense.* | | | | | | | | | |
| Blepharitis | 8 | | | | | | | | 8 |
| Cerebral hemorrhage | 3 | | | | 1 | | | | 4 |
| Conjunctivitis | 37 | 1 | 7 | | | | | | 45 |
| Cyclitis | | | | | | | 1 | | 1 |
| Decubitis, neuropathic | 6 | | 2 | | | | | | 8 |
| Glaucoma | 1 | | | | | | | | 1 |
| Hemiplegia | 4 | | | | | | | | 4 |
| Hordeolum | | | 2 | | | | | | 2 |
| Iritis | 7 | | 1 | | | | | | 8 |
| Keratitis | 5 | | 1 | | | | | | 6 |
| Migraine | 1 | | 4 | | | | | | 5 |
| Monoplegia | 1 | | | | | | | | 1 |
| Neuralgia | 6 | 3 | 2 | | | | | | 11 |
| Ototis media | 10 | | 1 | | | | | | 11 |
| Paralysis agitans | 1 | | | | | | | | 1 |
| Polyneuritis | | | | | | | 1 | | 1 |
| Sciatica | 1 | | | | | | | | 1 |
| Status epilepticus | 2 | | | | | | | | 2 |
| Tic douloureux | 1 | 1 | 1 | | | | | | 3 |
| *Diseases of the circulatory system.* | | | | | | | | | |
| Anasarca | 3 | | | | | | | | 3 |
| Aneurism, aortic | 1 | | | | | | | | 1 |
| Cardiac valvular disease | 21 | | 6 | | 4 | 1 | 5 | | 37 |
| Endocarditis: | | | | | | | | | |
| Acute | 1 | | | | | | | | 1 |
| Chronic | 11 | | 2 | | 3 | | | | 16 |
| Gangrene of toes | 4 | | 3 | | | | | | 7 |
| Hemorrhoids | 24 | | 4 | | | | | | 28 |
| Pericarditis | | | 1 | | | | | | 1 |
| *Diseases of the respiratory system.* | | | | | | | | | |
| Asthma | 5 | | 8 | | | | | | 13 |
| Bronchitis | 86 | 44 | 13 | | 3 | | | | 146 |
| Empyema | 1 | | 1 | | | | | | 2 |
| Hæmoptysis | 1 | | 1 | | | | | | 2 |
| Hydrothorax | 4 | | | | | | | | 4 |
| Laryngitis | 3 | 6 | 12 | | | | | | 21 |
| Pleurisy | 8 | | 1 | | | 1 | 1 | | 11 |
| Pneumonia: | | | | | | | | | |
| Broncho | 18 | | 4 | | 4 | 1 | | | 27 |
| Hypostatic | 20 | | 2 | | 2 | | | | 24 |
| Lobar | 3 | | 2 | | | | | | 5 |
| Pulmonary congestion | 2 | | | | | | | | 2 |
| Pulmonary emphysema | 1 | | | | | | | | 1 |
| Pulmonary gangrene | 6 | | 2 | | | | 1 | | 9 |
| Pulmonary œdema | 3 | | | | | | | | 3 |
| Rhinitis | 74 | 19 | 4 | | | | | | 97 |
| *Diseases of the digestive system.* | | | | | | | | | |
| Appendicitis | 2 | | | | 1 | | 1 | | 4 |
| Cholangitis | 3 | | | | | | | | 3 |
| Cholecystitis | 1 | | | | | | | | 1 |
| Cholelithiasis | 1 | | | | | | | | 1 |
| Colitis | 16 | 1 | 2 | | 6 | 1 | 6 | | 32 |
| Colic, intestinal | 14 | | 4 | | | | | | 18 |
| Diarrhœa | 34 | | | | 2 | | | | 36 |
| Dysentery | 2 | | | | | | | | 2 |
| Dysentery, amebic | 1 | | | | | | | | 1 |
| Enteritis | 20 | | 2 | 1 | | | 1 | | 24 |
| Fistula in ano | 2 | 1 | | | | | | | 3 |
| Gastritis | 16 | 1 | 5 | | 2 | | | | 24 |
| Hernia | 3 | | | | | | | | 3 |
| Hyperchlorhydria | 2 | | | | | | | | 2 |
| Indigestion | 21 | 2 | 3 | | | | | | 26 |
| Obstipation | 1 | | | | | | | | 1 |
| Peritonitis | 1 | | | | | | 1 | | 2 |
| Pharyngitis | 10 | 4 | 3 | | 1 | | | | 18 |
| Stomatitis | 8 | | 1 | | | | | | 9 |

*Physical diseases treated during the year ended June 30, 1911*—Continued.

| | Male. | | | | Female. | | | | Total. |
|---|---|---|---|---|---|---|---|---|---|
| | White. | | Colored. | | White. | | Colored. | | |
| | Patient. | Employee. | Patient. | Employee. | Patient. | Employee. | Patient. | Employee. | |
| *Diseases of the genito-urinary system.* | | | | | | | | | |
| Balanitis | 2 | | | | | | | | 2 |
| Cystitis | 63 | 1 | 13 | | 1 | | | | 78 |
| Hydrocele | 1 | | 2 | | | | | | 3 |
| Menorrhagia | | | | | 1 | | | | 1 |
| Nephritis | 33 | | 9 | | 5 | | 2 | | 49 |
| Ovaritis | | | | | | 1 | | | 1 |
| Papilloma of bladder | 1 | | | | | | | | 1 |
| Phimosis | | | 1 | | | | | | 1 |
| Pyelonephritis | 2 | | | | | | | | 2 |
| Urethral stricture | 4 | | | | | | | | 4 |
| Uterine fibroid | | | | | 1 | | 1 | | 2 |
| *Diseases of the glandular system.* | | | | | | | | | |
| Adenitis: | | | | | | | | | |
| Cervical | | | 2 | | | | | | 2 |
| Inguinal | 1 | | | | | | | | 1 |
| Parotitis | 1 | 1 | | | | | | | 2 |
| *Diseases of the skin and cellular tissues.* | | | | | | | | | |
| Abscesses | 79 | 7 | 20 | | 5 | 3 | 2 | | 116 |
| Acne vulgaris | 3 | | | | | | | | 3 |
| Carbunculosis | 6 | | 1 | | | | | | 7 |
| Cellulitis | 7 | | | | | | | | 7 |
| Decubitus | 1 | | 2 | | | | | | 3 |
| Dermatitis: | | | | | | | | | |
| Simplex | 2 | | | | | | | | 2 |
| Venenata | 1 | 1 | | | | | 1 | | 3 |
| Eczema | 34 | 1 | 4 | | | | | | 39 |
| Epitheloma | 2 | | | | | | | | 2 |
| Furunculosis | 36 | 3 | | | 4 | | 1 | | 44 |
| Herpes zoster | 2 | | | | | | | | 2 |
| Impetigo contagiosa | | 2 | | | | | | | 2 |
| Onychia | 2 | | | | | | | | 2 |
| Paronychia | 4 | | | | | | | | 4 |
| Pediculosis | 3 | | | | | | | | 3 |
| Pityriasis rosae | 1 | | | | | | | | 1 |
| Psoriasis | 3 | | | | 1 | 1 | | | 5 |
| Tinea: | | | | | | | | | |
| Circinati | 1 | | | | | | | | 1 |
| Versi color | 1 | | | | | | | | 1 |
| Scabies | 3 | | | | | | | | 3 |
| Ulcers: | | | | | | | | | |
| Simple | 3 | | 6 | | | | | | 9 |
| Varicose | 9 | 1 | | | | | | | 10 |
| Urticaria | 2 | 1 | | | | | | | 3 |
| *Diseases of the organs of locomotion.* | | | | | | | | | |
| Arthritis | 1 | | | | | | | | 1 |
| Lumbago | 14 | | 3 | | | | | | 17 |
| Myalgia | 3 | | | | | | | | 3 |
| *Accidental traumatisms.* | | | | | | | | | |
| Abrasions | 2 | | 2 | | | | | | 4 |
| Burns | 12 | | 2 | | | | 2 | | 16 |
| Contusions | 30 | 4 | 10 | | | | | | 44 |
| Dislocation of finger | 1 | | 1 | | | | | | 2 |
| Dislocation of humerus | 1 | 1 | | | | | | | 2 |
| Dislocation of inferior maxilla | 1 | | | | | | 1 | | 2 |
| Fracture, Colles's | 1 | | | | 2 | | | | 3 |
| Fracture of femur | 3 | | | | 1 | 1 | | | 5 |
| Fracture of fibula | 1 | | | | | | | | 1 |
| Fracture of inferior maxilla | 1 | | | | | | | | 1 |
| Fracture of metacarpal bone | 2 | 1 | 1 | | 1 | | | | 5 |
| Fracture of nasal bone | | | | | 1 | | | | 1 |
| Fracture of rib | | | 1 | | | | | | 1 |
| Fracture of scapula | 1 | | | | | | | | 1 |
| Fracture of ulna | | | | | 1 | | | | 1 |
| Sprains | 29 | 5 | | | 4 | | 1 | | 39 |

*Physical diseases treated during the year ended June 30, 1911*—Continued.

| | Male. | | | | Female. | | | | Total. |
|---|---|---|---|---|---|---|---|---|---|
| | White. | | Colored. | | White. | | Colored. | | |
| | Patient. | Employee. | Patient. | Employee. | Patient. | Employee. | Patient. | Employee. | |
| *Accidental traumatisms*—Continued. | | | | | | | | | |
| Wounds: | | | | | | | | | |
| Contused | 37 | 1 | 3 | ...... | ...... | ...... | ...... | ...... | 41 |
| Incised | 52 | 5 | 6 | ...... | 1 | ...... | 2 | ...... | 66 |
| Infected | 24 | 1 | 4 | ...... | 2 | ...... | 2 | ...... | 33 |
| Lacerated | 97 | 10 | 34 | 3 | ...... | ...... | ...... | ...... | 144 |
| Punctured | 3 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 3 |
| *Miscellaneous.* | | | | | | | | | |
| Childbirth | ...... | ...... | ...... | ...... | ...... | ...... | 1 | ...... | 1 |
| Undetermined fever | 8 | ...... | ...... | ...... | ...... | ...... | ...... | ...... | 8 |
| Total | 1,551 | 225 | 265 | 9 | 108 | 50 | 65 | ...... | 2,273 |

*Causes of death during the year ended June 30, 1911.*

| | Male. | | Female. | | Total. |
|---|---|---|---|---|---|
| | White. | Colored. | White. | Colored. | |
| *General and infectious diseases.* | | | | | |
| Erysipelas | ...... | ...... | ...... | 1 | 1 |
| Tuberculosis: | | | | | |
| Miliary, acute | 1 | ...... | ...... | 1 | 2 |
| Peritoneal | 1 | 1 | ...... | ...... | 2 |
| Pulmonary | 16 | 4 | 7 | 7 | 34 |
| Pulmonary and intestinal | 4 | 1 | ...... | ...... | 5 |
| *Diseases of the nervous system.* | | | | | |
| Cerebral arteriosclerosis | 9 | 2 | 1 | ...... | 12 |
| Cerebral atrophy and exhaustion | 1 | ...... | ...... | ...... | 1 |
| Cerebral hemorrhage | 3 | ...... | ...... | 1 | 4 |
| Cerebral hyperæmia | ...... | 1 | ...... | ...... | 1 |
| Cerebral softening | 3 | 2 | ...... | 1 | 6 |
| Cerebral syphilis | 1 | 1 | ...... | ...... | 2 |
| Cerebral tumor | 1 | ...... | ...... | ...... | 1 |
| Excitement, exhaustion from | 1 | ...... | ...... | ...... | 1 |
| Insolation | 1 | ...... | ...... | ...... | 1 |
| Meningitis, chronic | ...... | ...... | ...... | 1 | 1 |
| Organic brain disease | 1 | 4 | ...... | 1 | 6 |
| Paresis | 20 | 7 | 3 | 2 | 32 |
| Status epilepticus | 2 | 1 | ...... | ...... | 3 |
| *Diseases of the circulatory system.* | | | | | |
| Aneurism of aorta | 2 | ...... | ...... | ...... | 2 |
| Aortic thrombosis | 3 | ...... | ...... | ...... | 3 |
| Cardiac atrophy | 1 | ...... | ...... | ...... | 1 |
| Cardio-renal disease | ...... | ...... | ...... | 1 | 1 |
| Cardiac thrombosis | 1 | ...... | ...... | ...... | 1 |
| Cardiac valvular disease | 13 | 8 | 4 | 6 | 31 |
| Gangrene of leg | 1 | ...... | ...... | ...... | 1 |
| Myocarditis | 1 | ...... | ...... | 1 | 2 |
| Rupture of aorta | 1 | ...... | ...... | ...... | 1 |
| *Diseases of the respiratory system.* | | | | | |
| Asphyxiation (suicidal) | 2 | 1 | ...... | ...... | 3 |
| Bronchitis: | | | | | |
| Acute | 2 | ...... | 1 | ...... | 3 |
| Chronic | 1 | ...... | ...... | ...... | 1 |
| Empyema | 1 | 1 | ...... | ...... | 2 |
| Pneumonia: | | | | | |
| Broncho | 13 | 1 | 2 | 1 | 17 |
| Hypostatic | 26 | 2 | 5 | 4 | 37 |
| Lobar | 2 | ...... | ...... | 1 | 3 |
| Pulmonary congestion | 6 | ...... | ...... | ...... | 6 |
| Pulmonary gangrene | 6 | 1 | ...... | 1 | 8 |
| Pulmonary œdema | 3 | ...... | ...... | ...... | 3 |

*Causes of death during the year ended June 30, 1911*—Continued.

| | Male. | | Female. | | Total. |
|---|---|---|---|---|---|
| | White. | Colored. | White. | Colored. | |
| *Diseases of the digestive system.* | | | | | |
| Appendicitis | 1 | | | | 1 |
| Cholangitis, acute | 2 | | | | 2 |
| Colitis: | | | | | |
| Acute | 4 | | | | 4 |
| Chronic ulcerative | 3 | | | | 3 |
| Gastritis, chronic | | | 1 | 1 | 2 |
| Gastro-enteritis | 1 | | | | 1 |
| Hepatic abscess | 1 | | | | 1 |
| Hepatic cirrhosis | 1 | | | | 1 |
| Ileo-colitis | | | 1 | 1 | 2 |
| Intestinal obstruction | 2 | | | | 2 |
| Peritonitis, acute | | | | 1 | 1 |
| *Diseases of the genito-urinary system.* | | | | | |
| Cystitis | 1 | | | | 1 |
| Cystitis and pyelonephritis | 2 | | | | 2 |
| Nephritis: | | | | | |
| Chronic diffuse | | 1 | 1 | 2 | 4 |
| Interstitial | 4 | | 3 | | 7 |
| Parenchymatous | | | 1 | 1 | 2 |
| Puerperium, exhaustion from | | | | 1 | 1 |
| *External causes.* | | | | | |
| Hemorrhage from pancreas, traumatic | | 1 | | | 1 |
| Wound of throat, suicidal | 1 | | | | 1 |
| Total | 173 | 40 | 30 | 37 | 2.0 |

The following operations were performed during the year, in addition to 485 minor operations by members of the medical staff.

*Operations performed during the year ended June 30, 1911.*

| | Male. | Female. | Total. |
|---|---|---|---|
| Appendectomy | 3 | | 3 |
| Cystotomy | 1 | | 1 |
| Excision of epithelioma of face | 1 | | 1 |
| Excision of epithelioma of foot | 1 | | 1 |
| Fracture of ankle, reduction of | 2 | | 2 |
| Fracture, Colles's, reduction of | | 2 | 2 |
| Fracture of femur, reduction of | 3 | 2 | 5 |
| Fracture of fibula, reduction of | 1 | | 1 |
| Fracture of humerus, reduction of | 1 | | 1 |
| Fracture of inferior maxilla, reduction of | 2 | | 2 |
| Fracture of ulna, reduction of | | 1 | 1 |
| Fracture of wrist, reduction of | 1 | | 1 |
| Hemorrhoidectomy | 2 | | 2 |
| Herniotomy | 1 | 1 | 2 |
| Laparotomy | | 1 | 1 |
| Repair of wound of trachea | 1 | | 1 |
| Tonsilectomy | | 2 | 2 |
| Total | 20 | 9 | 29 |

*Work of hydrotherapeutic department.*

| | Male. | | Female. | | Total. |
|---|---|---|---|---|---|
| | White. | Colored. | White. | Colored. | |
| Number of patients treated | 224 | | 149 | 95 | 468 |
| Number of treatments given | 12,092 | | 12,863 | 9,613 | 34,568 |

Dr. A. D. Weakley, in charge of the dental department, submits the following report of work done during the year:

*Work of dental department during year ended June 30, 1911.*

| | |
|---|---|
| Number of teeth extracted | 570 |
| Number of fillings | 802 |
| Number of treatments | 541 |
| Sets of artificial teeth | 25 |
| Sets of artificial teeth repaired | 17 |
| Artificial crowns | 6 |
| Total number of patients treated | 1,528 |

Dr. Arthur H. Kimball, in charge of the eye, ear, nose, and throat department, submits the following report of the work done during the year:

*Work of eye, ear, nose, and throat department during year ended June 30, 1911.*

| | |
|---|---|
| Number of visits | 53 |
| Examinations and treatments: | |
| Diseases of the eye— | |
| Refraction | 321 |
| Other diseases of the eye | 207 |
| Diseases of the nose and throat | 74 |
| Diseases of the ear | 72 |
| Operations | 5 |
| Total | 679 |

## SCIENTIFIC DEPARTMENT.

During the year an effort has been made to bring about a closer cooperation between the clinical and scientific work. This effort has been specifically directed toward the supplying of the laboratories with sufficient data when examinations are requested, with an effort to promptly furnish the results of such examinations by the laboratories.

Following the practice inaugurated last year, a course of instruction by the members of the scientific department, with the assistance of some of the older members of the staff, was given for the medical internes. This course extended from January 30 to April 2, and included the following exercises:

Dr. White: Introduction; constitution and content of consciousness; mental mechanisms. (Four lectures.)

Dr. Schwinn: Physiconeurological data. (One lecture.)

Dr. Franz: Reflexes; sensation; movement; apperception and perception; association; memory; aphasia. (Seven lectures.)

Dr. Blackburn: Surface anatomy; blood vessels; internal anatomy; gross pathology of the brain. (Four lectures.)

Dr. Lafora: Normal structures; abnormal elements; histopathological complexes; phenomena of degeneration and regeneration; systematic histopathology. (Five lectures.)

Dr. Hough: Clinico-pathological data and methods, including cerebrospinal fluid and Wassermann tests. (Four lectures.)

Drs. Franz and Schwinn: Practical exercises in the mental and neurological examination of patients. (Nine lectures.)

Following the first 12 exercises on mental and neurological methods, etc., an examination was held, and another examination on anatomy, histopathology, and pathology was given at the end of the course.

The passing of this examination was made a condition to promotion from the position of medical interne.

*Psychological laboratory.*—The work in the laboratory has continued much as in former years, most of the time being devoted to the investigation of topics of neurological and psychiatrical interest.

The experiments on the changes in volume and pulsation of the cerebrum, which was begun in collaboration with Dr. A. H. Southerland, formerly assistant in the laboratory, have been tabulated, but before attempting publication it appears wise to await the opportunity of testing further similar cases.

At the time of writing the last report, and for several months thereafter, observations were made on the reaction of certain classes of the insane to stimulii of a painful character. The results gave promise that the work might be of some diagnostic or explanatory value, but for the understanding and for the interpretation of the phenomena it was necessary that similar observations be obtained on normal people. A provisional promise of an opportunity to make such observations was obtained, but various reasons prevented the accomplishment of this. Until there arises the opportunity of examining normal people in a way similar to that used with the patients here the present work must remain uncompleted, for the records already obtained and any others like them will require for their elucidation similar series of observations of the mentally normal.

The work on one part of the occipital lobes in monkeys has been finished and will shortly be published. Along with the observations of the cerebral cortex there has been included an investigation of the color and size reaction in the monkey. This work has shown that the older investigations, which have assigned a single function to the calcarine type of cortex, are probably wrong in this supposition and that the lateral aspect of the occipital lobes has a sensory function in connection with the eye movements rather than with the visual sensations per se.

Plans have been made for carrying out work on the eye movements resulting from stimulation of the occipital cortex, this work being complemental to that already accomplished. This work is planned in connection with Dr. D. K. Shute, one of the hospital's consulting ophthalmologists.

A preliminary account of the work on habit formation in cases of dementia præcox has been finished by Dr. G. H. Kent, assistant in psychology, and will, it is expected, be published shortly. An account of this work was used as a dissertation for the degree of doctor of philosophy which was granted Miss Kent. This work was suggested on account of the fact that although for years it has been the practice to keep patients in insane hospitals occupied there was no available data for determining the ease or difficulty of producing habits in these cases which make up a large percentage of the hospital population, and because at the same time ideas regarding the value of the occupation method of treatment were based solely upon opinion and upon casual observation.

The conclusions from the experiments and observations of the patients during the course of the work are that definite practice effects can be obtained even from advanced cases of dementia præcox, but that the means employed for the production of a habit must be adapted to some extent to the individual, and that it seems well to take advantage, as far as possible, of habits already present. The practice effect gained in one kind of work appears to be transferable to some extent to another kind of work which differs from the first in its perceptual but not in its motor aspect. There are indications that some of the energy ordinarily expended in mischievous performances may be directed into more favorable channels by careful training, and the results as a whole warrant the attention of similar work with reference to the therapeutic aspect as well as the scientific.

*Clinico-pathological laboratory.*—The routine work of the clinico-pathological laboratory consisted of the following:

| | |
|---|---|
| Wassermann reactions | 1,066 |
| Cerebrospinal-fluid examinations | 139 |
| Urinalyses | 1,015 |
| Sputum examinations | 162 |
| Blood examinations | 41 |
| Miscellaneous, including pus, stomach contents, etc | 26 |

Numerous histological examinations of various organs and tissues were also made, including a number for diagnosis, which were removed surgically.

For purposes of obtaining a final diagnosis in certain cases of paresis, suspected paresis, cerebral syphilis, etc., small pieces of brain tissue were removed post mortem for examination by means of cerebral punctures, either through the clavarium, orbit, nose, or mouth. At the same time fluid from the ventricles was obtained for examination. This procedure has been but recently practiced, and so far only 11 cases have been so examined, in 2 of which the clinical diagnosis of paresis was not confirmed.

Experimental work with the Wassermann reaction has been continued and consisted chiefly of the quantative working of the test in order to determine more accurately the effect of the various antisyphilitic reactions, especially that of Ehrlich's salvarsan.

It has been the duty of the clinical pathologist to prepare and administer salvarsan for the various services, and since January last 27 doses have been administered.

*Histopathological laboratory.*—During the past year over 4,000 slides have been prepared for study. The work on different fields of psychiatry and neurology has been done in the laboratory from two different points of view:

First, to collaborate with the work of the clinicians by attempting to give detailed histopathological diagnoses, and to compare this with the clinical as well as with the symptom complex recorded in the clinical history; and secondly, from a point of view specially histological, i. e., without consideration of the clinical part.

The first kind of investigation, no doubt the most fruitful, can be followed only when the clinical history is accurate and usually contains observations over a long period. Superficial studies (those in which only casual observations are made) can give rise more to mixed and inexact conclusions than to scientific and progressive results. Moreover, there are problems, which will be mentioned later, of unique histological importance, the clinical pictures in which are absolutely indifferent to the histologist or histopathologist.

The studies of the first line of work may be divided into two principal groups, namely, (*a*) the routine work, (*b*) the detailed histopathological study of cases in which the clinical history showed special peculiarities which made an exact diagnosis difficult.

The first kind of study consisted in obtaining freezing sections from material kept in formalin for 24 hours, and staining in Toluidin blue or in silver nitrate according to the method of Bielschowsky. Thus we obtained preparations which show the structure and changes of the cells, some of the vessels, and neuroglia and a number of products of disintegration. This simple and short method permits the diagnosis of the histopathologically best differentiated psychoses (senile dementia, arteriosclerotic dementia, paresis, cerebral syphilis) with great accuracy and gives opportunity for the study of a large number of cases in a short time. By the use of this method it has been possible to supply the clinicians with numerous histopathological reports of cases of the nature mentioned.

The second or detailed kind of study is employed in cases which show neither a special clinical history nor in which the usual routine histopathological examination gave indications of a noncommon process of the brain. In such cases, a detailed study of the sections from material in alcohol, formol, Weigert's mordant, and several other fixatives are prepared with a large number of staining methods, which reveal the most varigated normal and pathological structures. An attempt is then made to diagnose the changes and to specify their location with a view of discovering the relation between these facts and the symptoms mentioned in the history. To this group of investigations belong the following studies:

Histopathological changes in a case of myoclonic epilepsy.

Histopathology of a case of Alzheimer's disease.

Histopathological changes in a case of poliomyelitis.

Changes in a case of ependymoglioma of the fourth ventricle complicated with angioma of the pons.

Structural changes in the vessels and nuclei around the aqueduct of Sylvius in a case of Wernicke's polioencephalitis cervacilis, hemorragica superior.

The study of lesions in the cortex in a case of senile cortical deterioration, which shows the greater importance the vessel hyperplasy has over the punctiform hemorrhages as Shroeder and Alzheimer first indicated.

These six studies are finished and, with the exception of two of them, will appear in early publications. Besides these, other works of the same nature are in progress, as follows:

A detailed study of the cerebral architectonic of the brain in four cases of microgyria.

To the same group of detailed investigations belong a great number of cases in which there were found at autopsy focal lesions, causing definite neurological symptoms (as aphasia, apraxia, hemiplegia, etc.) and in the case histories of which symptoms in connection with these lesions had been recorded.

The acquisition by the hospital of the new Sartorius microtome for sections of the whole brain will permit of extensive work in this line similar to that of Dejerine in Paris, Brodmann and Vogt in Berlin, and Henchen in Norway. However, the great amount of time (one year) which is required for the preparation of the brain for this purpose has prevented its use up to the present. Nevertheless, three large brains of cases of thalamic syndrome are now ready to be cut, as well as two brains of supplementary cortex of microgyric origin.

The studies made in this line are:

The study of a case of hemiplegia without the discovery of any lesion at autopsy (case which showed microscopically a large decrease in the number of fibers of the pyramidal tract, probably of a autocthonous or toxic nature).

The study of a case of tabes at the age of 76 years, showing slight decrease of the nervous fibers in the posterior bundles and a subpial hemorrhage extending over the spinal cord. This case offered a good opportunity for the study of the regenerative phenomena in the spinal ganglia and posterior bundles as described by Nageotte and by Marinesco and Minea. These phenomena were confirmed in spite of the advanced age of the case.

In the same line of anatomo-pathological detailed investigation belongs the following:

Study of serial sections of the brain in three cases of thalamic lesions (two of them diagnosed during life).

A large number of brains with different forms of aphasia, hemiplegias, etc., are being prepared for the same purpose. Finally, to the second line of studies, i. e., those of a purely histological and histopathological nature, without connection with the clinical part, belong the following investigations:

Study of the karyorrhexis of the neuroglia in different pathological conditions of the brain. (Already published.)

Study of the origin and production of amyloid bodies in the central nervous system. (In press.)

Study of special plaques of connective tissue of the dura mater not previously described.

Study of the structure and architectonic of an heterotopy of the brain on the inferior surface of the spheno-occipital convolutions.

Investigations of certain phenomena of regeneration produced under the connective plaques of the ependyma, as found in arteriosclerotic people. (In the press.)

Besides these studies, other work in connection with the psychologist and with the clinical pathologist has been done and is now in progress, as, for instance:

The study of numerous sections of the occipital lobes of monkeys operated upon by Dr. Franz.

Cytological study of the spinal fluid in 11 cases of epidemic poliomyelitis. (Already published in connection with the Clinical Pathologist.)

In connection with the Clinical Pathologist it is planned to study the viscosity of the spinal fluid in normal cases and in the different pathological processes (mental and neurological). For this purpose a viscosimeter after Determann has been ordered, and work upon the problem will begin as soon as that apparatus can be obtained. A work on cerebral puncture in post-mortem examinations is also in progress in connection with the Clinical Pathologist.

*Pathological laboratory.*—During the year 165 post-mortem examinations were made, about 59 per cent of the total number of deaths.

The following table of pulmonary tuberculosis shows that during the year 41 deaths were attributed to pulmonary tuberculosis, 8 of which did not come to autopsy. In the autopsy work there were found 28 active cases and 29 latent cases, which, plus 8 cases based upon clinical diagnosis, equals 65 cases found during the year out of a total of 280 deaths.

*Analysis of deaths due to tuberculosis for fiscal years ended June 30, 1885–1911.*

| Date. | Deaths. | Post-mortem examinations. | Cases not examined, post-mortem. | Deaths due to pulmonary tuberculosis. | Well-marked tubercular cases, post-mortem. | Cases of latent or limited pulmonary tuberculosis found in autopsies. | Total of pulmonary tubercular cases examined, post-mortem. | Cases of tuberculosis among those not examined by autopsy, based upon clinical diagnosis. | Total of all cases of death with pulmonary tuberculosis, clinical and post-mortem. | Percentage of tubercular cases among those that died, recognized clinically and at autopsy. | Percentage of those examined, post-mortem, which showed tubercular lesions. | Cases which died of other diseases than tuberculosis. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1885 | 105 | 69 | 36 | 13 | 18 | 3 | 21 | 2 | 23 | 21.9 | 30.4 | 92 |
| 1886 | 102 | 72 | 30 | 24 | 26 | 1 | 27 | 8 | 35 | 34.3 | 37.5 | 78 |
| 1887 | 92 | 49 | 43 | 13 | 9 | 1 | 10 | 9 | 19 | 20.6 | 20.4 | 79 |
| 1888 | 120 | 79 | 41 | 14 | 14 | 6 | 20 | 8 | 28 | 23.3 | 25.3 | 106 |
| 1889 | 114 | 67 | 47 | 23 | 19 | 3 | 22 | 10 | 32 | 28.0 | 32.8 | 91 |
| 1890 | 140 | 108 | 32 | 20 | 22 | 10 | 32 | 6 | 38 | 27.1 | 29.6 | 120 |
| 1891 | 128 | 79 | 49 | 21 | 13 | 5 | 18 | 13 | 31 | 24.2 | 22.7 | 107 |
| 1892 | 153 | 96 | 57 | 13 | 13 | 9 | 22 | 9 | 31 | 20.2 | 23.0 | 140 |
| 1893 | 181 | 117 | 64 | 22 | 34 | 9 | 43 | 8 | 51 | 28.1 | 36.7 | 159 |
| 1894 | 167 | 115 | 52 | 28 | 27 | 13 | 40 | 13 | 53 | 31.7 | 34.7 | 139 |
| 1895 | 179 | 125 | 54 | 18 | 20 | 6 | 26 | 11 | 37 | 20.6 | 20.8 | 161 |
| 1896 | 187 | 119 | 68 | 21 | 23 | 11 | 34 | 12 | 46 | 24.6 | 28.5 | 166 |
| 1897 | 162 | 90 | 72 | 13 | 15 | 4 | 19 | 9 | 28 | 17.2 | 21.1 | 149 |
| 1898 | 197 | 85 | 112 | 19 | 17 | 3 | 20 | 14 | 34 | 17.6 | 23.5 | 178 |
| 1899 | 193 | 81 | 112 | 31 | 22 | 3 | 25 | 20 | 45 | 23.3 | 30.8 | 162 |
| 1900 | 184 | 94 | 90 | 25 | 17 | 6 | 23 | 10 | 33 | 17.9 | 24.4 | 159 |
| 1901 | 226 | 109 | 117 | 31 | 27 | 14 | 41 | 16 | 57 | 25.0 | 37.8 | 195 |
| 1902 | 177 | 92 | 85 | 19 | 20 | 7 | 27 | 7 | 34 | 29.3 | 29.0 | 158 |
| 1903 | 258 | 125 | 133 | 36 | 25 | 18 | 43 | 15 | 58 | 22.5 | 34.4 | 222 |
| 1904 | 243 | 103 | 140 | 28 | 15 | 5 | 20 | 13 | 33 | 13.6 | 19.4 | 215 |
| 1905 | 236 | 114 | 122 | 28 | 18 | 6 | 24 | 12 | 36 | 15.2 | 21.0 | 208 |
| 1906 | 202 | 114 | 88 | 29 | 18 | 11 | 29 | 11 | 40 | 19.8 | 25.4 | 173 |
| 1907 | 216 | 128 | 88 | 33 | 16 | 15 | 31 | 17 | 48 | 22.2 | 24.2 | 184 |
| 1908 | 201 | 128 | 73 | 14 | 12 | 15 | 27 | 4 | 31 | 15.4 | 21.0 | 187 |
| 1909 | 255 | 164 | 91 | 38 | 30 | 29 | 59 | 9 | 68 | 26.6 | 35.9 | 217 |
| 1910 | 260 | 161 | 99 | 25 | 21 | 28 | 49 | 16 | 65 | 25.0 | 30.5 | 235 |
| 1911 | 280 | 165 | 115 | 41 | 28 | 29 | 57 | 8 | 65 | 23.2 | 31.7 | 239 |
| Total | 4,958 | 2,848 | 2,110 | 640 | 539 | 270 | 809 | 290 | 1,099 | 22.2 | 28.4 | 4,318 |

## PUBLICATIONS.

The following publications by members of the hospital staff have appeared during the year:

By William A. White, M. D., superintendent:

Scheme for the standard minimum examination of mental cases for use in hospitals for the insane. Amer. Jour. Insanity, 1910. vol. 67, 17–24.

Address at the formal opening of the School of Medicine, Howard University. Jour., 1910, vol. 8, No. 2.

The theory, methods, and psychotherapeutic value of psychoanalysis. Interstate Med. Jour., 1910, vol. 17.

The new functional psychiatry. Archives of Diagnosis 1910, vol. 3, 323–340.

Preventive principles in the field of medicine. Jour. Amer. Pub. Health Assoc., 1911, Vol. I.

Outlines of psychiatry, 3d ed., 1911, 272 pp.

Mental mechanisms, 1911, 151 pp.

(*With Dr. Barnes.*) A plan for indexing cases in hospitals for the insane. Amer. Jour. Insanity, 1911, vol. 67, 597–603.

By Henry W. Miller, M. D., formerly clinical director:

Mental examination of patients by nurses. Amer. Jour. Nursing, 1910, vol. 10, 939–943.

(*With Dr. Achucarro.*) Report of a case of juvenile paresis. Amer. Jour. Insanity, 1911, vol. 67, 559–571.

By I. W. Blackburn, M. D., pathologist:
  Hypernephroma. N. Y. Med. Jour., 1910, vol. 92, 1112–1121.

By Shepherd Ivory Franz, A. B., Ph. D., psychologist:
  On the association functions of the cerebrum. Jour. Philos. Psychol. and Sci. Methods, 1910, vol. 7, 673–683.
  On the functions of the post-central cerebral convolutions. Jour. Compar. Neurol., 1911, vol. 21, 113–127.
  The functions of the cerebrum. Psychol. Bull., 1911, vol. 8, 111–119.
  (*With Dr. Ruediger.*) Sensory changes in the skin following the application of local anesthetics and other agents. I. Ethyl chloride. Amer. Jour. Physiol., 1910, vol. 27, 45–59.

By George H. Schwinn, M. D., first assistant physician:
  Some of the difficulties encountered in making a diagnosis of paresis. Jour. Nerv. and Ment. Dis., 1910, vol. 37, 754–765.

By Mary O'Malley, M. D., senior assistant physician:
  A case of mixed cell sarcoma of the pituitary body, with a report of the autopsy findings. N. Y. Med Jour., 1910, vol. 92, 1219–1222.
  The after care of the insane. The Dietetic and Hygienic Gazette, 1911, vol. 27, 346–348.

By William H. Hough, M. D., clinico-pathologist:
  (*With Dr. Lafora.*) The cerebrospinal fluid in acute anterior poliomyelitis. N. Y. Med. Jour., 1910, vol. 92, 924–925.
  (*With Dr. Lafora.*) Some findings in the cerebrospinal fluid in 11 cases of acute anterior poliomyelitis—epidemic form. Folia Neuro-biologica, 1911, vol. 5, 221–234.
  (*With Dr. Miller.*) Vergleichende Globulinmessungen an luetischen Series, wein klin. wochenschr., 1911, vol. 24, Nr. 5.

By Heber Butts, M. D., United States Navy:
  Insanity in the Navy. U. S. Naval Bull., 1910, 459–476.
  The mental examination of candidates for enlistment in the Navy and Marine Corps. U. S. Naval Med. Bull., 1911, 29–38.

By Capt. Lloyd L. Smith, Medical Corps, U. S. Army:
  Report of a case of middle meningeal hemorrhage accompanied by actual hemiplegia: operation, recovery. Jour. Amer. Med. Assoc., 1910, vol. 55, 1259–1260.
  Mental diseases in the military service, with special reference to dementia præcox. Military Surgeon, 1911, vol. 28, 426–445.

By Francis M. Barnes, jr., M. D., junior assistant physician:
  Pupillary disturbances in the alcoholic psychoses. N. Y. Med. Jour., 1911, vol. 93, 928–931.
  (*With Dr. White.*) A plan for indexing cases in hospitals for the insane. Amer. Jour. Insanity, 1911, vol. 67, 597–603.

By Bernard Glueck, M. D., assistant physician:
  A typical general paralysis of the insane. N. Y. Med. Jour., 1910, vol. 92, 807–809.
  Traumatic psychoses and post-traumatic psychopathic states. Jour. Amer. Med. Assoc., 1911, vol. 56, 943–948.

By Eva C. Reid, M. D., junior assistant physician:
  Autopsychology of the manic depressive. Jour. Nerv. and Ment. Dis., 1910, vol. 37, 606–620.

By Meyer Solomon, M. D., junior assistant physician:
  A hurried bird's-eye view of the problem of the modern care of the insane. N. Y. Med. Jour., 1911, vol. 93, 611–616.
  An obscure case of traumatic subdural hemorrhage without fracture. Jour. Amer. Med. Assoc., 1911, vol. 56, 956–958.

By Gonzalo R. Lafora, M. D., histopathologist:
  Sur la Karyorrhexis Neurolique. Trav. du lab. de rech. biol., de l'Univ. de Madrid, 1910.
  Zur Histopathologie des Rückenmarkes bei der Dementia arteriosclerotica und senilis. Monatschr. f. Psychiat. u. Neurol., 1911, vol. 29, 1–33.
  (*With Dr. Hough.*) The cerebrospinal fluid in acute anterior poliomyelitis. N. Y. Med. Jour., 1910, vol. 92, 924–925.
  (*With Dr. Hough.*) Some findings in the cerebrospinal fluid in 11 cases of acute anterior poliomyelitis-epidemic form. Folia Neuro-biologica, 1911, vol. 5, 221–234.

By Nicholas Achucarro, M. D.:
  (*With Dr. Miller.*) Report of a case of juvenile paresis. Amer. Jour. Insanity, 1911, vol. 67, 559–571.

## STAFF CHANGES.

On June 18, 1911, Dr. I. W. Blackburn, pathologist, died. Dr. Blackburn had been connected continuously with the hospital since his appointment as pathologist in 1884, and during this long period of service he had been most active in pathological work of various sorts. At the time of his death he was one of the best known pathologists of the country, and in his particular specialty, the gross pathology of the brain, he was probably without a peer.

The following resignations took effect during the year: Dr. Harry Sicherman, junior assistant physician; Dr. Paul E. Bowers, junior assistant physician; Dr. Isaac N. Kelly, medical interne.

The following new appointments and assignments were made during the year: Dr. Isaac N. Kelly, medical interne; Dr. John H. Thorne, medical interne; Dr. Josephine I. Stransky, medical interne; Dr. James Loughran, medical interne; Dr. Halbert Robinson, medical interne; Dr. Hyman Laveson, medical interne; Grace H. Kent, Ph. D., assistant in psychology. Dr. Lloyd L. Smith, of the United States Army, was assigned to duty in this hospital on July 14, 1910, to make a special study of the subject of military psychiatry as it affects the Army.

## SCIENTIFIC MEETINGS.

During the year there has been two scientific meetings held at the hospital. The papers presented are as follows:

January 19—Staff meeting:
  Dr. White: Cataloguing mental cases.
  Dr. Glascock: Report of a case of apraxia.
  Dr. Lafora: Histopathology and pathogeny of myoclonic epilepsy with demonstration of microscopic preparations.

The regular meeting of the Society for Mental and Nervous Diseases was held at the hospital in conjunction with the Baltimore Neurological Society on Thursday evening, June 1.

### *Program—Symposium on cerebral tumors.*

Dr. Harvey Cushing: Concerning intercranial growths in general.
Dr. John S. Neat (by invitation): Pathology of cerebral tumors.
Dr. Tom Williams: Symptoms and diagnosis of cerebral tumors.
Dr. D. Percy Hickling: Symptoms and diagnosis of tumors of cerebellum and pons.
Dr. Bordley: Eye symptoms of cerebral tumors.
Five-minute report of cases.
  Dr. Schwinn: Paresis with focal symptoms.
  Dr. O'Malley: Tumor of the hypothesis. Dural sarcoma compressing the central gyri.
  Dr. Glascock: Glioma involving mainly the insula.
  Dr. Dynan: Tumor of midbrain. Tumor of dura mater. Cerebral syphilis with focal symptoms.

On Wednesday evening, March 8, the staff of the hospital presented the entire program at the meeting of the Medical Society of the District of Columbia. Numerous papers other than those included in these meetings have been presented by the various members of the staff from time to time throughout the year.

April 20, 1911—Staff meeting.
  Dr. Dynan: Thalamic syndrome, with presentation of cases.
  Dr. Williams: Nervous symptoms presaging arteriosclerosis.

## BULLETIN NO. 3.

At the close of the year Bulletin No. 3 is going to press. It contains the following articles:

Dr. Franz:
- On the association functions of the cerebrum.
- On the function of the post-central cerebral convolutions.
- (*With William C. Ruediger, Ph. D.*) Sensory changes in the skin following the application of local anæsthetics and other agents. I. Ethyl chloride.

Dr. Blackburn:
- Pachymeningitis interna.
- Atrophy of the brain in the insane.
- On the median anterior cerebral artery as found among the insane.
- Spindle-celled endothelial sarcoma of the dura mater.

Dr. Hough:
- (*With Dr. Lafora.*) Some findings in the cerebrospinal fluid of acute anterior poliomyelitis—epidemic form.
- (*With R. Müller, M. D.*) Comparative globulin estimation of luetic sera.

Dr. Lafora:
- On neuroglia karyorrhexis.
- On the presence of amyloid bodies in the protoplasm of the ganglion cells; a contribution to the study of the amyloid substance in the nervous system.
- Notes on some phenomena of reaction and regeneration of the central nervous system.
- (*With Dr. Glueck.*) Contribution to the histopathology and pathogenesis of myoclonic epilepsy.
- (*With Dr. Hough.*) Some findings in the cerebrospinal fluid of acute anterior poliomyelitis—epidemic form.

Dr. Barnes:
- Pupillary disturbances in the alcoholic psychoses.

Dr. Ruediger:
- (*With Dr. Franz.*) Sensory changes in the skin following the application of local anæsthetics and other agents. I. Ethyl chloride.

Dr. Müller:
- (*With Dr. Hough.*) Comparative globulin estimation of luetic sera.

Bibliography of publications by members of the staff and of work performed at the Government Hospital for the Insane from January 1, 1903, to June 30, 1911.

## GENERAL CONSIDERATIONS.

In previous reports under this caption attention has been called to the necessity for outlining some definite policy with reference to the future growth of the hospital. This matter has come so frequently and so prominently into the foreground of late that the Secretary of the Interior, after consultation with the President, decided to appoint a committee to take up this whole matter. As a result a committee was named under department instructions dated December 23, 1910, to consist of six persons, one member to be designated by each of the following: The Secretary of War, the Secretary of the Navy, the Attorney General, the Commissioners of the District of Columbia, the Board of Visitors of the Government Hospital for the Insane, and the Secretary of the Interior. The personnel of this committee is as follows:

Surg. Gen. George H. Torney, representing the Secretary of War.
Surg. A. W. Dunbar, representing the Secretary of the Navy.
Robert V. La Dow, superintendent of prisons, representing the Attorney General.
Maj. William V. Judson, Engineers, United States Army, representing the District of Columbia.
Mr. Scott C. Bone, representing the board of visitors.
Dr. William A. White, superintendent of the hospital, representing the Secretary of the Interior.

The instructions to the committee were as follows:

1. To investigate and report on any defects in the laws governing the conduct of the institution and the commitment of patients thereto.
2. To investigate and report on the advisability of continuing therein patients committed from the District, and from the Army and Navy from distant points.
3. To recommend as to the policy to be adopted relating to the growth of the institution, and the matter of additional lands, buildings, equipment, etc.
4. To report on the present conduct of the institution, and to make any recommendations necessary for the improvement of the service and the advancement of the interests of the inmates.

This committee is at present in session, and it is hoped will be in a position to present a report by fall.

## NEEDS OF THE HOSPITAL.

The appropriations recommended for the fiscal year 1912–13 are as follows: For the support, clothing, and treatment in the Government Hospital for the Insane of the insane of the Army and Navy, Marine Corps, Revenue-Cutter Service, inmates of the National Homes for Disabled Volunteer Soldiers, persons charged with or convicted of crime against the United States who are insane, all persons who have become insane since their entry into the military service of the United States who have been admitted to the hospital and who are indigent, including purchase, maintenance, and driving of necessary horses and vehicles, and of horses and vehicles for official use of the superintendent, for the indigent insane admitted from the District of Columbia, and nonresident insane persons under temporary care, the sum of $657,800. This amount is based on 2,990 patients at $220 per capita. This number is arrived at by estimating the probable increase on the basis of what the increase has been in past years. Pursuing the same method of calculation for the District of Columbia patients, their share is $323,400, leaving $334,400 to be provided for in the sundry civil bill.

For expenses in returning escaped patients to the hospital the sum of $1,500 is needed to be set apart. A decision of the comptroller prevents the payment of these expenses out of the support fund of the hospital and makes it necessary that a special appropriation be made for this purpose.

The usual authority should be given in the sundry civil bill to use $1,500 in defraying the expense of removal of patients to their friends on leaving the hospital.

A further provision in the same bill is necessary authorizing the sum of $1,000 to be used in the purchase of books, periodicals, and papers for the use of the hospital and for the medical library.

For roadways, walks, and grading, $5,000 is necessary for making the necessary repairs and renewals.

For cement wall about Howard hall, and shop and storehouse building, $55,209 is needed. This item is in lieu of a previously requested appropriation of $160,000 for a new building for the criminal insane, and is based upon the recommendation of a special committee, which has spent considerable time in studying the accommodations for the criminal insane and the problem of their future care at the hospital. The present building has never been altogether safe for such a dangerous class of patients, and although its safety has been recently increased by remodeling the window guards, still it is considered that further safeguard should be taken. It seems most feasible to construct a cement wall 24 feet in height about the building at a considerable distance. This will not only render escape from the building practically impossible, but will give a much-needed outside courtyard for exercise. The construction of a shop and storehouse building is made necessary in connection with this proposed wall, for the reason that the basement of Howard hall is at present used as a shop and storehouse, and if a wall were constructed about the building the use of the basement for these purposes would have to be abandoned, and as there is no other available place to which to move, the construction of a separate building is rendered necessary.

For the construction of a house for the superintendent, $40,000.

The building of a separate residence for the superintendent is in line with the policy adopted by other large institutions of this character.

For remodeling of the chapel and the superintendent's present quarters, $10,000.

It is now more than 10 years since Congress has appropriated any money for additional construction for the housing of either patients or employees. During this period the patient population of the hospital has increased over 800, and there has been a corresponding increase of employees. At the present time all of the quarters for housing the officers and employees of the institution are in use and it is difficult to see just how the next two or three years is going to be cared for in this respect. This appropriation of $10,000, plus the appropriation of $40,000 asked for a house for the superintendent, making a total of $50,000, will make available the old chapel and the present quarters of the superintendent for use as either quarters for patients or employees. It is estimated that a sufficiently large number of people can be housed in these quarters to warrant the expenditure of $50,000; in fact, it is believed that new construction for the number of persons who can be taken care of in this way could not be put up for this amount. It is therefore urged that these two appropriations be allowed on the ground of economy. Whether these quarters should be turned over to the patients, to employees, or to medical officers will depend to a certain extent on the action taken by Congress with respect to the appropriations asked for for new construction.

For the construction and equipment of an epileptic group to accommodate 140 patients, $160,000 is needed.

The hospital has been increasing rapidly in size lately, and the thousand beds for which the hospital extension was constructed are already filled. In certain portions of the hospital we are beginning now to see evidences of crowding. It is therefore the part of wisdom to provide for further growth, and in making this provision it is deemed desirable to build such extensions as will enable a better classification of the hospital population. Whereas the epileptics are at present fairly well segregated, they are in wards that were built for a different class of patients. The buildings of an epileptic group can be so constructed as to admit of indefinite extension, and will give this class of patients a character of surroundings much better suited to them than they now have, while the wards they now occupy can be used for the general purpose of the hospital population. The estimated cost on a basis of $1,000 per capita is considered under all conditions to be reasonable, while $100 per capita has been allowed for equipment. The additional $6,000 is intended to include the cost of the plans, the architects' fees, advertising, etc.

To enable the Secretary of the Interior to purchase additional land for the Government Hospital for the Insane, $100,000, or so much thereof as may be necessary. In the event of his inability to make such purchase, the Secretary of the Interior shall proceed in the manner prescribed for providing a site for the Government Printing Office, in so much of the act of July 1, 1898, as is set forth on pages 648 and 649 of volume 30 of the Statutes at Large, to acquire the land desired; and for the purpose of such acquisition the Secretary of the Interior shall have and exercise all the power conferred upon the Public Printer in such act; the appropriation to be disbursed by the Secretary of the Interior. The need of additional land by the hospital has been appreciated for some time and each successive superintendent for many years past has requested appropriations for its purchase. The need of land has become more acute of late because all of the new construction has been placed upon land previously used for farming purposes, thus restricting the output of the farm to such an extent that it is now impossible to raise enough fodder for the dairy herd. The hospital is increasing in size at the rate of upward of 100 patients per annum, and more buildings must be added in the near future, which will still further infringe upon the land used for farming.

For new barns and piggeries, $65,000. The present buildings comprising the barns and piggeries, are located on the east side of Nichols Avenue and immediately fronting on it. All of these buildings are very old, and many of them in extremely dilapidated and disgraceful condition. It is desired to construct entirely new buildings to take their place. The buildings are not only old and dilapidated, but it is impossible because of these conditions to keep them in proper sanitary condition, while one of the barns is positively unsafe. It is desired to construct a dairy barn consisting of 4 units, each to accommodate 50 cows, and piggeries to accommodate 600 pigs. A recent investigation of the dairy conditions by an expert from the Agricultural Department showed them in a very unfavorable light, and indicated very clearly that steps should be taken to improve them. Milk is one of the most important and staple articles of diet in the hospital, and should be produced in a way to insure its freedom from even the suspicion of disease. The Agricultural Department has cooperated with the hospital and has prepared plans for a dairy barn which are in accordance with the latest ideas of what such a structure should be.

For new entrance and gatehouse $8,000 is needed. The building of the hospital extension, with the location of the offices in the new administration building, has removed the center of the institution from the old main building to the present administration building, and makes it desirable to provide a new main entrance at the northern extremity of the administration group.

For a fence to be placed along the frontage of the hospital grounds on the east side of Nichols Avenue the sum of $14,000 is needed.

This portion of the hospital grounds is occupied by four buildings of the hospital extension, which contain approximately 400 patients. There is now along the thoroughfare a dilapidated, unsightly wooden fence, which it is desired to replace with a substantial one.

For general repairs and improvements the sum of $60,000 is needed. The increase in this estimate is rendered necessary by recent decisions of the auditor and comptroller, who are placing a very much more rigid interpretation upon what expenditures come under the designation of repairs and improvements than ever before. As a result many things which for years have been expended from the support fund have had to come from the repair fund, and this fund necessarily, therefore, has to be augmented.

*Summary of appropriations recommended.*

| | |
|---|---|
| Support | $334,000 |
| Roadways, walks, and grading | 5,000 |
| Provision for criminal insane, and shop and storehouse building | 55,209 |
| House for the superintendent | 40,000 |
| Remodeling of the chapel and the superintendent's present quarters | 10,000 |
| Construction and equipment of an epileptic group | 160,000 |
| Additional land | 100,000 |
| New barns and piggeries | 65,000 |
| New entrance and gatehouse | 8,000 |
| Fence | 14,000 |
| Repairs and improvements | 60,000 |
| Total | 851,609 |

## STATISTICAL TABLES.

### *Admissions and discharges.*

REMAINING JUNE 30, 1910.

| | Male. | | | Female. | | | Total. |
|---|---|---|---|---|---|---|---|
| | White. | Colored. | Total. | White. | Colored. | Total. | |
| Army | 878 | 49 | 927 | | | | 927 |
| Navy | 258 | 17 | 275 | | | | 275 |
| Public Health and Marine-Hospital Service | 36 | 9 | 45 | | | | 45 |
| Civil life | 630 | 316 | 946 | 458 | 265 | 723 | 1,669 |
| Total | 1,802 | 391 | 2,193 | 458 | 265 | 723 | 2,916 |

ADMITTED DURING THE YEAR.

| | Male. | | | Female. | | | Total. |
|---|---|---|---|---|---|---|---|
| | White. | Colored. | Total. | White. | Colored. | Total. | |
| Army | 118 | 11 | 129 | | | | 129 |
| Navy | 83 | 3 | 86 | | | | 86 |
| Public Health and Marine-Hospital Service | 7 | | 7 | | | | 7 |
| Civil life | 151 | 70 | 221 | 105 | 75 | 180 | 401 |
| Total | 359 | 84 | 443 | 105 | 75 | 180 | 623 |

DISCHARGED DURING THE YEAR—RECOVERED.

| | Male. | | | Female. | | | Total. |
|---|---|---|---|---|---|---|---|
| | White. | Colored. | Total. | White. | Colored. | Total. | |
| Army | 32 | 3 | 35 | | | | 35 |
| Navy | 43 | 1 | 44 | | | | 44 |
| Public Health and Marine-Hospital Service | | 1 | 1 | | | | 1 |
| Civil life | 30 | 17 | 47 | 23 | 19 | 42 | 89 |
| Total | 105 | 22 | 127 | 23 | 19 | 42 | 169 |

## DISCHARGED DURING THE YEAR—IMPROVED.

| | Male. | | | Female. | | | Total. |
|---|---|---|---|---|---|---|---|
| | White. | Colored. | Total. | White. | Colored. | Total. | |
| Army | 14 | | 14 | | | | 14 |
| Navy | 10 | | 10 | | | | 10 |
| Public Health and Marine-Hospital Service | | | | | | | |
| Civil life | 12 | 11 | 23 | 9 | 4 | 13 | 36 |
| Total | 36 | 11 | 47 | 9 | 4 | 13 | 60 |

## DISCHARGED DURING THE YEAR—UNIMPROVED.

| | Male. | | | Female. | | | Total. |
|---|---|---|---|---|---|---|---|
| | White. | Colored. | Total. | White. | Colored. | Total. | |
| Army | 17 | 1 | 18 | | | | 18 |
| Navy | 8 | | 8 | | | | 8 |
| Public Health and Marine-Hospital Service | 1 | | 1 | | | | 1 |
| Civil life | 53 | 16 | 69 | 19 | 7 | 26 | 95 |
| Total | 79 | 17 | 96 | 19 | 7 | 26 | 122 |

## DISCHARGED DURING THE YEAR—NOT INSANE.

| | Male. | | | Female. | | | Total. |
|---|---|---|---|---|---|---|---|
| | White. | Colored. | Total. | White. | Colored. | Total. | |
| Army | 8 | | 8 | | | | 8 |
| Navy | 12 | | 12 | | | | 12 |
| Public Health and Marine-Hospital Service | | | | | | | |
| Civil life | 16 | 2 | 18 | 3 | 5 | 8 | 26 |
| Total | 36 | 2 | 38 | 3 | 5 | 8 | 46 |

## DECEASES DURING THE YEAR.

| | Male. | | | Female. | | | Total. |
|---|---|---|---|---|---|---|---|
| | White. | Colored. | Total. | White. | Colored. | Total. | |
| Army | 100 | 12 | 112 | | | | 112 |
| Navy | 17 | 2 | 19 | | | | 19 |
| Public Health and Marine-Hospital Service | 4 | 1 | 5 | | | | 5 |
| Civil life | 51 | 25 | 76 | 31 | 37 | 68 | 144 |
| Total | 172 | 40 | 212 | 31 | 37 | 68 | 280 |

## REMAINING JUNE 30, 1911.

| | Male. | | | Female. | | | Total. |
|---|---|---|---|---|---|---|---|
| | White. | Colored. | Total. | White. | Colored. | Total. | |
| Army | 825 | 44 | 869 | | | | 869 |
| Navy | 251 | 17 | 268 | | | | 268 |
| Public Health and Marine-Hospital Service | 38 | 7 | 45 | | | | 45 |
| Civil life | 619 | 315 | 934 | 478 | 268 | 746 | 1,680 |
| Total | 1,733 | 383 | 2,116 | 478 | 268 | 746 | 2,862 |

## SUMMARY.

| | Male. | | | Female. | | | Total. |
|---|---|---|---|---|---|---|---|
| | White. | Colored. | Total. | White. | Colored. | Total. | |
| Remaining June 30, 1910 | 1,802 | 391 | 2,193 | 458 | 265 | 723 | 2,916 |
| Admitted during year ending June 30, 1911 | 359 | 84 | 443 | 105 | 75 | 180 | 623 |
| Total number under treatment | 2,161 | 475 | 2,636 | 563 | 340 | 903 | 3,539 |
| Discharged: | | | | | | | |
| Recovered | 105 | 22 | 127 | 23 | 19 | 42 | 169 |
| Improved | 36 | 11 | 47 | 9 | 4 | 13 | 60 |
| Unimproved | 79 | 17 | 96 | 19 | 7 | 26 | 122 |
| Not insane | 36 | 2 | 38 | 3 | 5 | 8 | 46 |
| Died | 172 | 40 | 212 | 31 | 37 | 68 | 280 |
| Total | 428 | 92 | 520 | 85 | 72 | 157 | 677 |
| Remaining June 30, 1911 | 1,733 | 383 | 2,116 | 478 | 268 | 746 | 2,862 |

*Admissions and discharges, classified according to sex, for the year ended June 30, 1911, and since opening of the hospital in 1855.*

| | Year ended June 30, 1911. | | | Since opening of the hospital. | | |
|---|---|---|---|---|---|---|
| | Male. | Female. | Total. | Male. | Female. | Total. |
| Admitted | 443 | 180 | 623 | 14,944 | 4,317 | 19,261 |
| Discharged: | | | | | | |
| Recovered | 165 | 50 | 215 | 5,042 | 1,130 | 6,172 |
| Improved | 47 | 13 | 60 | 2,236 | 831 | 3,067 |
| Unimproved | 96 | 26 | 122 | 567 | 228 | 795 |
| Died | 212 | 68 | 280 | 4,983 | 1,382 | 6,365 |
| Remaining | 2,116 | 746 | 2,862 | | | |
| Total admissions | | | | 14,944 | 4,317 | 19,261 |

*Percentage of total admissions recovered, improved, etc.*

| | Male. | Female. | Total. |
|---|---|---|---|
| Recovered | 33.75 | 26.17 | 31.98 |
| Improved | 14.95 | 19.25 | 15.91 |
| Unimproved | 3.79 | 5.28 | 4.18 |
| Died | 33.35 | 32.01 | 33.04 |
| Remaining | 14.16 | 17.29 | 14.89 |
| Total | 100.00 | 100.00 | 100.00 |

*Monthly changes of population.*

| | Admitted. | | | Discharged. | | | Died. | | | Total. |
|---|---|---|---|---|---|---|---|---|---|---|
| | Male. | Female. | Total. | Male. | Female. | Total. | Male. | Female. | Total. | |
| 1910. | | | | | | | | | | |
| July | 34 | 14 | 48 | 65 | 8 | 73 | 21 | 5 | 26 | 99 |
| August | 33 | 17 | 50 | 27 | 4 | 31 | 12 | 4 | 16 | 47 |
| September | 23 | 18 | 41 | 22 | 10 | 32 | 13 | 4 | 17 | 49 |
| October | 54 | 17 | 71 | 20 | 11 | 31 | 22 | 10 | 32 | 63 |
| November | 21 | 13 | 34 | 14 | 3 | 17 | 25 | 5 | 30 | 47 |
| December | 28 | 10 | 38 | 16 | 3 | 19 | 22 | 5 | 27 | 46 |
| 1911. | | | | | | | | | | |
| January | 44 | 20 | 64 | 16 | 8 | 24 | 16 | 5 | 21 | 45 |
| February | 23 | 10 | 33 | 19 | 9 | 28 | 18 | 4 | 22 | 50 |
| March | 36 | 15 | 51 | 27 | 11 | 38 | 16 | 3 | 19 | 57 |
| April | 34 | 18 | 52 | 30 | 6 | 36 | 12 | 8 | 20 | 56 |
| May | 68 | 12 | 80 | 20 | 8 | 28 | 17 | 6 | 23 | 51 |
| June | 45 | 16 | 61 | 32 | 8 | 40 | 18 | 9 | 27 | 67 |
| Total | 443 | 180 | 623 | 308 | 89 | 397 | 212 | 68 | 280 | 677 |

***Admissions, discharges, and deaths, with the mean annual mortality and proportion of recoveries, per cent of the discharges, including deaths, for each year since the opening of the hospital.***

| Year. | Admitted. | | | Discharged. | | | | | | | | | | | | Remaining June 30 in each year. | | | Daily average. | | | Percentage of recoveries on discharges. | | | Percentage of deaths on average numbers. | | | Percentage of deaths on total number. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Recovered. | | | Improved. | | | Unimproved. | | | Died. | | | | | | | | | | | | | | | | | |
| | M. | F. | Total. | M. | F. | Total. | M. | F. | Total. | M. | F. | Total. | M. | F. | Total. | M. | F. | Total. | M. | F. | Total. | M. | F. | Total. | M. | F. | Total. | M. | F. | Total. |
| 1855 | 26 | 37 | 63 | .... | 3 | 3 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 26 | 34 | 60 | 19.35 | 20.65 | 40.00 | ..... | 100.00 | 100.00 | ..... | ..... | ..... | ..... | ..... | ..... |
| 1855–56 | 36 | 11 | 47 | 3 | 2 | 5 | .... | .... | .... | .... | 1 | 1 | 5 | 3 | 8 | 54 | 39 | 93 | 41.20 | 37.98 | 70.18 | 37.50 | 33.33 | 35.71 | 12.13 | 7.09 | 10.10 | 8.06 | 6.66 | 7.48 |
| 1856–57 | 25 | 27 | 52 | 2 | 4 | 6 | 3 | 1 | 4 | 7 | 3 | 10 | 8 | 8 | 16 | 59 | 50 | 109 | 54.55 | 42.80 | 97.35 | 10.00 | 25.00 | 16.66 | 14.66 | 18.69 | 16.43 | 10.13 | 12.12 | 11.03 |
| 1857–58 | 29 | 14 | 43 | 13 | 5 | 18 | 1 | 1 | 2 | 2 | .... | 2 | 7 | 6 | 13 | 65 | 52 | 117 | 57.70 | 50.31 | 108.01 | 56.52 | 44.66 | 51.42 | 12.13 | 11.92 | 12.03 | 7.95 | 9.37 | 8.55 |
| 1858–59 | 47 | 18 | 65 | 16 | 5 | 21 | 1 | 4 | 5 | 5 | 3 | 8 | 6 | 4 | 10 | 84 | 54 | 138 | 72.93 | 56.24 | 129.17 | 57.13 | 31.25 | 47.73 | 8.22 | 7.11 | 7.74 | 5.36 | 5.71 | 5.49 |
| 1859–60 | 68 | 24 | 92 | 26 | 7 | 33 | 4 | 3 | 7 | 3 | 2 | 5 | 13 | 5 | 18 | 106 | 61 | 167 | 100.68 | 59.00 | 159.68 | 56.52 | 41.17 | 52.38 | 12.91 | 8.47 | 11.27 | 8.55 | 6.41 | 7.25 |
| 1860–61 | 64 | 31 | 95 | 42 | 11 | 53 | 5 | 2 | 7 | 2 | .... | 2 | 12 | 7 | 19 | 109 | 72 | 181 | 109.72 | 64.81 | 174.57 | 68.85 | 55.55 | 65.43 | 10.93 | 10.80 | 10.88 | 7.06 | 7.61 | 7.82 |
| 1861–62 | 174 | 12 | 186 | 96 | 8 | 104 | 14 | 1 | 15 | .... | .... | .... | 26 | 10 | 36 | 147 | 65 | 212 | 123.75 | 65.74 | 189.49 | 70.59 | 42.10 | 67.09 | 21.01 | 15.21 | 19.00 | 9.18 | 11.90 | 9.81 |
| 1862–63 | 330 | 25 | 355 | 197 | 6 | 203 | 17 | 1 | 18 | 3 | 3 | 6 | 57 | 4 | 61 | 203 | 76 | 279 | 168.41 | 72.31 | 240.72 | 71.89 | 42.85 | 70.45 | 33.84 | 5.53 | 25.34 | 11.95 | 4.44 | 10.76 |
| 1863–64 | 484 | 25 | 509 | 282 | 6 | 288 | 69 | 1 | 70 | 5 | .... | 5 | 67 | 8 | 75 | 364 | 86 | 350 | 205.73 | 77.66 | 283.39 | 66.66 | 40.00 | 65.75 | 42.56 | 10.30 | 26.40 | 11.75 | 7.92 | 9.51 |
| 1864–65 | 478 | 36 | 514 | 315 | 9 | 324 | 110 | 12 | 122 | 11 | .... | 11 | 139 | 8 | 147 | 167 | 93 | 200 | 277.42 | 33.81 | 361.23 | 54.78 | 31.03 | 53.64 | 50.10 | 9.54 | 40.69 | 18.73 | 6.55 | 17.01 |
| 1865–66 | 194 | 28 | 222 | 104 | 5 | 109 | 20 | 7 | 27 | 10 | 1 | 11 | 41 | 12 | 53 | 186 | 96 | 282 | 190.92 | 90.70 | 281.62 | 59.42 | 20.00 | 54.50 | 21.47 | 13.23 | 18.82 | 11.35 | 9.91 | 10.99 |
| 1866–67 | 88 | 21 | 109 | 45 | 7 | 52 | 11 | 3 | 14 | 11 | 1 | 12 | 19 | 14 | 33 | 188 | 92 | 280 | 189.06 | 89.46 | 279.12 | 52.32 | 28.00 | 46.85 | 10.02 | 15.65 | 11.82 | 6.93 | 11.96 | 8.44 |
| 1867–68 | 120 | 33 | 153 | 49 | 15 | 64 | 6 | 2 | 8 | 5 | 1 | 6 | 22 | 5 | 27 | 226 | 102 | 328 | 221.17 | 96.44 | 317.61 | 59.75 | 65.22 | 60.95 | 9.95 | 5.18 | 9.50 | 7.14 | 4.00 | 6.23 |
| 1868–69 | 133 | 35 | 168 | 59 | 11 | 70 | 9 | 6 | 15 | 8 | 2 | 10 | 24 | 9 | 33 | 259 | 109 | 368 | 244.55 | 108.03 | 352.58 | 59.00 | 39.28 | 54.69 | 9.81 | 8.33 | 9.35 | 6.70 | 6.57 | 6.65 |
| 1869–70 | 146 | 36 | 182 | 32 | 8 | 40 | 16 | 8 | 24 | 11 | 3 | 14 | 15 | 3 | 18 | 331 | 123 | 454 | 294.69 | 108.08 | 402.77 | 43.24 | 36.37 | 41.67 | 5.09 | 2.77 | 4.36 | 3.71 | 2.05 | 3.27 |
| 1870–71 | 161 | 34 | 195 | 50 | 12 | 62 | 21 | 7 | 28 | 4 | 3 | 7 | 33 | 11 | 44 | 384 | 124 | 508 | 354.34 | 121.66 | 476.00 | 46.30 | 36.36 | 43.97 | 9.31 | 9.04 | 9.24 | 6.70 | 7.00 | 6.78 |
| 1871–72 | 142 | 44 | 186 | 43 | 8 | 51 | 16 | 13 | 29 | 8 | 1 | 9 | 37 | 7 | 44 | 422 | 139 | 561 | 407.21 | 131.57 | 538.78 | 41.34 | 27.59 | 38.34 | 9.09 | 5.32 | 8.16 | 7.04 | 4.17 | 6.34 |
| 1872–73 | 153 | 51 | 204 | 49 | 15 | 64 | 23 | 5 | 28 | 3 | 5 | 8 | 32 | 13 | 45 | 468 | 152 | 626 | 431.03 | 144.11 | 575.14 | 45.40 | 39.47 | 44.13 | 7.42 | 9.02 | 7.82 | 5.56 | 6.84 | 5.88 |
| 1873–74 | 192 | 38 | 230 | 67 | 12 | 79 | 22 | 8 | 30 | 6 | 3 | 9 | 39 | 11 | 50 | 526 | 156 | 682 | 492.44 | 151.36 | 643.80 | 50.00 | 35.29 | 47.02 | 7.92 | 7.27 | 7.76 | 5.91 | 5.79 | 5.88 |
| 1874–75 | 179 | 51 | 230 | 66 | 9 | 75 | 28 | 22 | 50 | 8 | 3 | 11 | 51 | 7 | 58 | 552 | 166 | 718 | 536.46 | 164.17 | 700.63 | 42.13 | 21.95 | 38.66 | 9.50 | 4.26 | 8.27 | 7.23 | 3.38 | 6.36 |
| 1875–76 | 166 | 47 | 213 | 67 | 17 | 84 | 26 | 10 | 36 | 1 | .... | 1 | 48 | 18 | 66 | 570 | 168 | 744 | 564.78 | 165.59 | 730.37 | 47.18 | 37.78 | 45.45 | 8.49 | 10.87 | 9.04 | 6.68 | 8.45 | 7.09 |
| 1876–77 | 147 | 51 | 198 | 66 | 17 | 83 | 27 | 13 | 40 | 2 | .... | 2 | 45 | 7 | 52 | 583 | 182 | 765 | 587.41 | 176.30 | 763.71 | 47.80 | 45.94 | 46.89 | 7.66 | 3.96 | 6.80 | 6.22 | 3.19 | 5.52 |
| 1877–78 | 138 | 44 | 182 | 49 | 11 | 60 | 32 | 9 | 41 | 3 | 4 | 7 | 37 | 9 | 46 | 600 | 193 | 793 | 596.82 | 184.37 | 781.19 | 40.49 | 33.33 | 38.96 | 6.19 | 4.88 | 5.88 | 5.13 | 5.98 | 4.35 |
| 1878–79 | 169 | 53 | 222 | 68 | 24 | 92 | 30 | 7 | 37 | 3 | 1 | 4 | 51 | 12 | 63 | 617 | 202 | 819 | 619.10 | 196.70 | 815.80 | 44.73 | 54.54 | 46.93 | 8.23 | 6.10 | 7.72 | 6.63 | 4.87 | 6.20 |
| 1879–80 | 181 | 44 | 225 | 38 | 14 | 52 | 23 | 10 | 33 | .... | 3 | 3 | 46 | 13 | 59 | 691 | 206 | 897 | 655.34 | 196.63 | 851.97 | 35.51 | 35.00 | 35.37 | 7.01 | 6.61 | 6.92 | 5.76 | 5.28 | 5.65 |
| 1880–81 | 161 | 62 | 223 | 62 | 10 | 72 | 27 | 9 | 36 | .... | 6 | 6 | 63 | 18 | 81 | 700 | 225 | 925 | 685.37 | 111.38 | 896.75 | 40.78 | 23.25 | 36.92 | 9.19 | 8.51 | 9.03 | 7.39 | 6.71 | 7.23 |
| 1881–82 | 178 | 69 | 247 | 62 | 21 | 83 | 31 | 8 | 39 | 2 | 5 | 7 | 74 | 27 | 101 | 709 | 233 | 942 | 697.10 | 232.88 | 929.98 | 36.69 | 34.43 | 36.08 | 10.61 | 11.59 | 10.86 | 8.44 | 9.18 | 8.61 |
| 1882–83 | 201 | 64 | 265 | 76 | 19 | 95 | 33 | 16 | 49 | .... | 6 | 6 | 46 | 17 | 63 | 755 | 239 | 994 | 729.89 | 235.27 | 965.16 | 49.05 | 31.03 | 44.13 | 6.30 | 7.22 | 6.52 | 5.05 | 5.72 | 5.22 |
| 1883–84 | 286 | 64 | 347 | 68 | 13 | 81 | 35 | 8 | 43 | 3 | 1 | 4 | 51 | 16 | 67 | 884 | 262 | 1,146 | 797.21 | 243.27 | 1,040.48 | 42.03 | 34.21 | 40 51 | 6.39 | 6.57 | 6.44 | 4.90 | 5.33 | 4.99 |
| 1884–85 | 229 | 91 | 320 | 65 | 24 | 89 | 37 | 12 | 49 | 1 | 1 | 2 | 84 | 21 | 105 | 926 | 295 | 1,221 | 902.41 | 270.89 | 1,173.34 | 34.76 | 41.37 | 36.32 | 9.31 | 7.75 | 8.94 | 7.55 | 5.95 | 7.19 |
| 1885–86 | 234 | 69 | 303 | 55 | 22 | 77 | 58 | 15 | 73 | 2 | 3 | 5 | 79 | 23 | 102 | 966 | 301 | 1,267 | 936.39 | 283.23 | 1,219.62 | 28.35 | 34.92 | 29.96 | 8.54 | 8.12 | 8.36 | 6.81 | 6.32 | 6.69 |
| 1886–87 | 206 | 62 | 268 | 57 | 15 | 72 | 49 | 17 | 66 | 2 | 1 | 3 | 73 | 19 | 92 | 991 | 311 | 1,302 | 956.07 | 297.36 | 1,253.43 | 31.49 | 28.48 | 30.90 | 7.63 | 6.38 | 7.34 | 6.22 | 5.23 | 5.99 |
| 1887–88 | 247 | 71 | 318 | 59 | 10 | 69 | 52 | 14 | 66 | 3 | 1 | 4 | 95 | 25 | 120 | 1,029 | 332 | 1,361 | 1,009.55 | 315.55 | 1,325.08 | 28.23 | 20.60 | 26.64 | 9.41 | 7.92 | 9.06 | 7.67 | 5.64 | 7.41 |
| 1888–89 | 213 | 67 | 380 | 50 | 20 | 70 | 27 | 27 | 54 | 5 | 2 | 6 | 86 | 28 | 114 | 1,075 | 322 | 1,397 | 1,049.99 | 323.83 | 1,373.82 | 29.94 | 25.97 | 28.69 | 8.19 | 8.65 | 8.30 | 6.92 | 7.02 | 6.94 |
| 1889–90 | 274 | 71 | 345 | 39 | 6 | 45 | 43 | 6 | 49 | .... | 3 | 3 | 112 | 28 | 144 | 1,115 | 350 | 1,055 | 1,108.57 | 326.53 | 1,435.10 | 20.10 | 13.95 | 18.12 | 10.13 | 9.59 | 9.76 | 8.30 | 7.48 | 8.04 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1890-91.......... | 271 | 81 | 352 | 36 | 30 | 66 | 38 | 15 | 53 | 1 | 1 | 2 | 98 | 30 | 128 | 1,253 | 355 | 1,608 | 1,160.62 | 344.44 | 1,505.06 | 20.81 | 34.47 | 26.51 | 8.44 | 8.71 | 8.51 | 6.87 | 6.90 | 6.89 |
| 1891-92.......... | 233 | 70 | 303 | 56 | 12 | 68 | 69 | 13 | 82 | 8 | 3 | 11 | 121 | 32 | 153 | 1,232 | 365 | 1,597 | 1,226.64 | 348.65 | 1,575.29 | 22.05 | 20.00 | 21.66 | 9.80 | 9.18 | 9.71 | 8.14 | 7.53 | 8.01 |
| 1892-93.......... | 261 | 84 | 345 | 57 | 10 | 67 | 46 | 23 | 69 | 4 | 1 | 5 | 140 | 41 | 181 | 1,246 | 374 | 1,620 | 1,255.56 | 357.02 | 1,582.58 | 23.08 | 13.33 | 20.81 | 11.41 | 11.48 | 11.44 | 9.38 | 9.13 | 9.32 |
| 1893-94.......... | 273 | 88 | 361 | 49 | 13 | 62 | 49 | 16 | 65 | 6 | .... | 6 | 138 | 29 | 167 | 1,277 | 404 | 1,681 | 1,248.16 | 369.91 | 1,618.07 | 20.24 | 22.41 | 20.06 | 11.31 | 7.84 | 10.32 | 9.08 | 6.27 | 8.42 |
| 1894-95.......... | 293 | 78 | 371 | 68 | 30 | 98 | 40 | 32 | 72 | 1 | .... | 1 | 143 | 36 | 179 | 1,318 | 384 | 1,702 | 1,280.91 | 386.16 | 1,667.07 | 26.98 | 30.61 | 28.00 | 11.16 | 9.32 | 10.73 | 9.10 | 7.46 | 8.72 |
| 1895-96.......... | 278 | 92 | 370 | 74 | 15 | 89 | 39 | 14 | 53 | 7 | 1 | 8 | 146 | 41 | 187 | 1,330 | 405 | 1,735 | 1,200.08 | 379.25 | 1,669.33 | 27.81 | 21.12 | 26.40 | 11.31 | 10.81 | 11.20 | 9.14 | 8.61 | 9.02 |
| 1896-97.......... | 288 | 88 | 377 | 67 | 17 | 84 | 50 | 44 | 94 | 5 | .... | 5 | 130 | 32 | 162 | 1,367 | 400 | 1,767 | 1,326.08 | 383.82 | 1,709.90 | 26.58 | 18.27 | 24.34 | 9.80 | 8.33 | 9.47 | 8.02 | 6.49 | 7.67 |
| 1897-98.......... | 347 | 90 | 437 | 84 | 12 | 96 | 30 | 19 | 49 | 8 | 1 | 9 | 167 | 30 | 197 | 1,425 | 428 | 1,853 | 1,388.25 | 409.75 | 1,798.00 | 29.06 | 19.35 | 27.35 | 12.03 | 7.32 | 10.96 | 9.74 | 6.12 | 8.94 |
| 1898-99.......... | 498 | 105 | 603 | 173 | 16 | 189 | 59 | 29 | 88 | 38 | 10 | 48 | 158 | 35 | 193 | 1,495 | 443 | 1,938 | 1,438.33 | 433.51 | 1,871.84 | 40.42 | 17.77 | 36.48 | 10.98 | 8.07 | 10.31 | 8.21 | 6.56 | 7.85 |
| 1899-1900....... | 434 | 117 | 551 | 118 | 33 | 151 | 52 | 13 | 65 | 8 | 5 | 13 | 152 | 32 | 184 | 1,599 | 477 | 2,076 | 1,504.00 | 444.54 | 1,948.54 | 35.75 | 39.75 | 36.56 | 10.10 | 7.19 | 9.44 | 7.87 | 5.71 | 7.39 |
| 1900-1901....... | 519 | 136 | 655 | 202 | 33 | 235 | 52 | 25 | 77 | 11 | 6 | 17 | 193 | 33 | 226 | 1,660 | 516 | 2,176 | 1,583.33 | 483.33 | 2,066.66 | 44.10 | 34.02 | 42.34 | 12.19 | 6.83 | 10.93 | 9.11 | 5.38 | 8.27 |
| 1901-2........... | 532 | 154 | 686 | 209 | 39 | 248 | 78 | 20 | 98 | 9 | 11 | 20 | 137 | 40 | 177 | 1,759 | 557 | 2,316 | 1,675.85 | 518.16 | 2,194.01 | 48.26 | 34.51 | 45.42 | 8.17 | 7.70 | 8.06 | 6.24 | 5.97 | 6.18 |
| 1902-3........... | 554 | 180 | 734 | 211 | 50 | 261 | 106 | 25 | 131 | 19 | 6 | 25 | 189 | 69 | 258 | 1,782 | 587 | 2,369 | 1,737.58 | 553.58 | 2,291.16 | 39.73 | 33.33 | 38.32 | 10.88 | 12.47 | 11.26 | 8.17 | 9.36 | 8.45 |
| 1903-4........... | 584 | 182 | 766 | 194 | 42 | 236 | 95 | 35 | 130 | 21 | 13 | 34 | 189 | 54 | 245 | 1,867 | 625 | 2,492 | 1,783.08 | 577.00 | 2,360.08 | 38.87 | 29.16 | 36.70 | 10.60 | 8.66 | 10.29 | 7.98 | 6.50 | 7.75 |
| 1904-5........... | 493 | 174 | 667 | 151 | 53 | 204 | 101 | 42 | 143 | 12 | 9 | 21 | 181 | 55 | 236 | 1,912 | 639 | 2,551 | 1,848.50 | 598.00 | 2,446.50 | 33.70 | 33.12 | 33.55 | 9.79 | 9.19 | 9.64 | 7.66 | 6.88 | 7.47 |
| 1905-6........... | 421 | 180 | 601 | 173 | 60 | 233 | 94 | 33 | 127 | 29 | 13 | 42 | 150 | 52 | 202 | 1,887 | 661 | 2,548 | 1,887.50 | 654.50 | 2,542.00 | 38.34 | 37.34 | 38.07 | 7.94 | 7.95 | 7.94 | 6.42 | 6.34 | 6.40 |
| 1906-7........... | 437 | 182 | 619 | 136 | 45 | 181 | 82 | 52 | 134 | 28 | 12 | 40 | 165 | 51 | 216 | 1,913 | 683 | 2,596 | 1,898.10 | 671.83 | 2,569.93 | 32.60 | 27.50 | 31.17 | 8.69 | 7.60 | 8.40 | 7.09 | 6.05 | 6.82 |
| 1907-8........... | 472 | 171 | 643 | 123 | 39 | 162 | 80 | 30 | 110 | 28 | 5 | 33 | 156 | 45 | 201 | 1,998 | 735 | 2,733 | 1,965.70 | 699.00 | 2,664.70 | 31.52 | 32.77 | 32.40 | 7.93 | 6.43 | 7.54 | 6.54 | 5.27 | 6.20 |
| 1908-9........... | 517 | 174 | 691 | 133 | 60 | 193 | 52 | 30 | 82 | 35 | 7 | 42 | 185 | 70 | 255 | 2,110 | 742 | 2,852 | 2,061.00 | 740.66 | 2,801.66 | 31.11 | 34.13 | 31.99 | 8.97 | 9.46 | 9.10 | 7.35 | 7.70 | 7.44 |
| 1909-10.......... | 496 | 154 | 650 | 115 | 56 | 171 | 54 | 20 | 74 | 55 | 26 | 81 | 189 | 71 | 260 | 2,193 | 723 | 2,916 | 2,138.91 | 734.00 | 2,872.91 | 23.00 | 26.89 | 24.06 | 8.87 | 9.67 | 9.05 | 7.25 | 7.92 | 7.42 |
| 1910-11.......... | 443 | 180 | 623 | 165 | 50 | 215 | 117 | 13 | 60 | 96 | 26 | 122 | 212 | 68 | 280 | 2,116 | 746 | 2,867 | 2,143.33 | 740.67 | 2,884.00 | 31.73 | 31.85 | 31.76 | 9.89 | 9.19 | 9.70 | 8.04 | 7.52 | 7.91 |

Forty-six "not insane," 38 males and 8 females, are included with recovered in 1910-11.

*Nativity of patients admitted during the year and since the opening of the hospital in 1855.*

| Nativity. | During year. | Since 1855. |
|---|---|---|
| Native born: | | |
| Alabama | 1 | 64 |
| Arkansas | 1 | 36 |
| Arizona | 1 | 2 |
| California | | 33 |
| Colorado | | 13 |
| Connecticut | 4 | 127 |
| Dakota | | 12 |
| Delaware | 2 | 39 |
| District of Columbia | 112 | 2,499 |
| Florida | 1 | 23 |
| Georgia | 9 | 120 |
| Illinois | 10 | 270 |
| Indiana | 18 | 254 |
| Indian Territory | | 18 |
| Idaho | 1 | 1 |
| Iowa | 2 | 56 |
| Kansas | 2 | 50 |
| Kentucky | 13 | 259 |
| Louisiana | 3 | 60 |
| Maine | 3 | 151 |
| Maryland | 40 | 1,435 |
| Massachusetts | 22 | 583 |
| Michigan | 3 | 125 |
| Minnesota | 2 | 29 |
| Mississippi | 2 | 63 |
| Missouri | 8 | 154 |
| Montana | | 3 |
| Nebraska | 1 | 11 |
| New Hampshire | 2 | 94 |
| New Jersey | 7 | 184 |
| New Mexico | | 4 |
| New York | 28 | 1,196 |
| North Carolina | 12 | 178 |
| Ohio | 18 | 648 |
| Oklahoma | | 2 |
| Oregon | | 5 |
| Pennsylvania | 32 | 996 |
| Rhode Island | 2 | 57 |
| South Carolina | 4 | 67 |
| Tennessee | 4 | 154 |
| Texas | 4 | 70 |
| Utah | | 3 |
| Vermont | | 75 |
| Virginia | 68 | 1,930 |
| West Virginia | 2 | 83 |
| Wisconsin | | 81 |
| United States | 72 | 859 |
| Total | 516 | 13,176 |
| Foreign born: | | |
| Alsace | | 1 |
| Armenia | | 3 |
| Austria | 7 | 86 |
| Bahamas | | 1 |
| Bavaria | | 17 |
| Belgium | 1 | 9 |
| Bermuda | | 1 |
| Bohemia | | 8 |
| Foreign-born—Continued: | | |
| Brazil | | 1 |
| British East Indies | | 8 |
| British Columbia | | 1 |
| British Possessions | 1 | 3 |
| British West Indies | 1 | 14 |
| Buenos Aires | | 3 |
| Canada | 8 | 100 |
| Cape Verde Islands | | 1 |
| Chile | | 1 |
| China | | 2 |
| Coast of Africa | | 3 |
| Costa Rica | | 1 |
| Cuba | | 7 |
| Cyprus | | 1 |
| Denmark | 1 | 52 |
| England | 7 | 402 |
| Ecuador | 1 | 1 |
| Finland | | 10 |
| France | 1 | 104 |
| Germany | 30 | 1,063 |
| Greece | 1 | 9 |
| Guatemala | 1 | 1 |
| Holland | | 10 |
| Hungary | 1 | 25 |
| Iceland | | 1 |
| Ireland | 26 | 2,332 |
| Italy | 2 | 83 |
| Japan | | 10 |
| Korea | | 1 |
| Malta | | 3 |
| Mexico | 1 | 16 |
| New Brunswick | | 4 |
| New Foundland | | 3 |
| New Grenada | | 1 |
| Norway | 3 | 66 |
| Nova Scotia | | 23 |
| Panama | | 1 |
| Philippine Islands | 1 | 3 |
| Poland | | 36 |
| Portugal | | 8 |
| Prince Edward Island | | 3 |
| Prussia | 1 | 35 |
| Porto Rica | 1 | 1 |
| Roumania | | 5 |
| Russia | 4 | 88 |
| Sandwich Islands | | 3 |
| Saxony | | 6 |
| Scotland | 1 | 108 |
| Sicily | | 3 |
| Spain | 1 | 9 |
| Sweden | 1 | 110 |
| Switzerland | | 74 |
| Turkey | 1 | 8 |
| Wales | | 23 |
| West Indies | | 5 |
| At sea | | 1 |
| Unknown | 3 | 394 |
| Total | 623 | 19,261 |

*Ages of patients admitted during the year ended June 30, 1911.*

| Age. | Male. | Female. | Total. |
|---|---|---|---|
| 9 to 15 years | 2 | 2 | 4 |
| 15 to 20 years | 22 | 9 | 31 |
| 20 to 25 years | 67 | 11 | 78 |
| 25 to 30 years | 48 | 24 | 72 |
| 30 to 35 years | 55 | 27 | 82 |
| 35 to 40 years | 53 | 24 | 77 |
| 40 to 45 years | 29 | 18 | 47 |
| 45 to 50 years | 18 | 15 | 33 |
| 50 to 60 years | 35 | 20 | 55 |
| 60 to 70 years | 51 | 15 | 66 |
| 70 to 80 years | 50 | 10 | 60 |
| 80 to 90 years | 11 | 4 | 15 |
| Unascertained | 2 | 1 | 3 |
| Total | 443 | 180 | 623 |

### *Civil condition of patients admitted during the year ended June 30, 1911.*

| Condition. | Male. | Female. | Total. |
|---|---|---|---|
| Single | 253 | 68 | 321 |
| Married | 117 | 66 | 183 |
| Widowed | 65 | 42 | 107 |
| Divorced | 3 | | 3 |
| Unknown | 5 | 4 | 9 |
| Total | 443 | 180 | 623 |

### *Ages of patients who died during the year ended June 30, 1911.*

| Age. | Male. | Female. | Total. | Age. | Male. | Female. | Total. |
|---|---|---|---|---|---|---|---|
| 15 to 20 years | 2 | 1 | 3 | 50 to 60 years | 19 | 12 | 31 |
| 20 to 25 years | 3 | 1 | 4 | 60 to 70 years | 61 | 15 | 76 |
| 25 to 30 years | 10 | 2 | 12 | 70 to 80 years | 54 | 11 | 65 |
| 30 to 35 years | 15 | | 15 | 80 to 90 years | 16 | 6 | 22 |
| 35 to 40 years | 11 | 5 | 16 | Over 90 years | 1 | 1 | 2 |
| 40 to 45 years | 11 | 7 | 18 | | | | |
| 45 to 50 years | 9 | 7 | 16 | Total | 212 | 68 | 280 |

### *Duration of mental disease of patients who died during the year ended June 30, 1911.*

| Age. | Male. | Female. | Total. | Age. | Male. | Female. | Total. |
|---|---|---|---|---|---|---|---|
| Under 1 month | 3 | 2 | 5 | 4 to 6 years | 21 | 6 | 27 |
| 1 to 2 months | 4 | 5 | 9 | 6 to 10 years | 24 | 15 | 39 |
| 2 to 4 months | 8 | 3 | 11 | 10 to 15 years | 13 | 5 | 18 |
| 4 to 6 months | 8 | 3 | 11 | 15 to 20 years | 11 | 2 | 13 |
| 6 to 9 months | 15 | 3 | 18 | 20 to 25 years | 7 | 2 | 9 |
| 9 to 12 months | 12 | 3 | 15 | Over 25 years | 20 | 4 | 24 |
| 12 to 18 months | 15 | 1 | 16 | Unascertained | 5 | 2 | 7 |
| 18 months to 2 years | 16 | 2 | 18 | | | | |
| 2 to 3 years | 11 | 4 | 15 | Total | 212 | 68 | 280 |
| 3 to 4 years | 19 | 6 | 25 | | | | |

### *Ages of patients discharged recovered during the year ended June 30, 1911.*

| Age. | Male. | Female. | Total. | Age. | Male. | Female. | Total. |
|---|---|---|---|---|---|---|---|
| 10 to 20 years | 14 | 1 | 15 | 50 to 60 years | 6 | 5 | 11 |
| 20 to 30 years | 54 | 6 | 60 | 60 to 70 years | 8 | 2 | 10 |
| 30 to 40 years | 33 | 16 | 49 | | | | |
| 40 to 50 years | 12 | 12 | 24 | Total | 127 | 42 | 169 |

### *Duration of residence in the hospital of those recovered during the year ended June 30, 1911.*

| | Male. | | Female. | | Total. |
|---|---|---|---|---|---|
| | White. | Colored. | White. | Colored. | |
| 10 to 20 days | 2 | | 2 | | 4 |
| 20 to 30 days | 2 | 1 | | 1 | 4 |
| 1 to 2 months | 2 | 1 | 3 | | 6 |
| 2 to 3 months | 6 | | 1 | 1 | 8 |
| 3 to 4 months | 18 | 1 | 3 | 1 | 23 |
| 4 to 6 months | 17 | 5 | | | 22 |
| 6 to 9 months | 16 | 2 | 5 | 2 | 25 |
| 9 to 12 months | 9 | 1 | 1 | 4 | 15 |
| 1 to 2 years | 19 | 3 | 2 | 6 | 30 |
| 2 to 4 years | 6 | 5 | 3 | 2 | 16 |
| Over 4 years | 8 | 3 | 3 | 2 | 16 |
| Total | 105 | 22 | 23 | 19 | 169 |

*Forms of mental disease of patients admitted during the year ended June 30, 1911.*

| | Male. | | Female. | | Total. |
|---|---|---|---|---|---|
| | White. | Colored. | White. | Colored. | |
| Infection-exhaustion psychoses: | | | | | |
| Actute confusional type | 1 | | | 1 | 2 |
| Toxic psychoses—exogenous: | | | | | |
| Alcoholic | 16 | 2 | 8 | 5 | 31 |
| Paranoia and paranoid state not otherwise classified | 23 | 9 | 7 | 2 | 41 |
| Manic-depressive psychoses | 16 | 1 | 9 | 10 | 36 |
| Dementia praecox | 102 | 15 | 33 | 24 | 174 |
| Paresis | 35 | 13 | 2 | 2 | 52 |
| Prison psychoses | 3 | | | | 3 |
| Excitement, unclassified | 5 | | 1 | 3 | 9 |
| Dementia, unclassified | 7 | 4 | | 1 | 12 |
| Depression: | | | | | |
| Symptomatic | 4 | | | | 4 |
| Psychopathic | 3 | | 2 | | 5 |
| Confusional state | 2 | 1 | 1 | | 4 |
| Psychosis associated with other diseases: | | | | | |
| Psycho-neuroses— | | | | | |
| Epilepsy | 6 | 5 | 1 | 2 | 14 |
| Hysteria | | | 1 | 1 | 2 |
| Other nervous diseases— | | | | | |
| Huntington's chorea | | | 1 | | 1 |
| Cerebellar ataxia | | | 1 | | 1 |
| Organic disease and injury to the brain— | | | | | |
| Arterio-sclerosis | 34 | 13 | 7 | 9 | 63 |
| Syphilis | 10 | | 2 | 1 | 13 |
| Traumatism | 5 | | | | 5 |
| Diseases other than nervous— | | | | | |
| Psychosis associated with cardiac disease | | | | 1 | 1 |
| Amentia | 2 | | | | 2 |
| Involutional melancholia | 1 | | 8 | 1 | 10 |
| Senile dementia | 37 | 8 | 11 | 5 | 61 |
| Imbecility | 2 | 3 | 5 | 1 | 11 |
| Idiocy | 1 | | 1 | | 2 |
| Not insane | 25 | 3 | 2 | 5 | 35 |
| Undiagnosed | 19 | 7 | 2 | 1 | 29 |
| Total | 359 | 84 | 105 | 75 | 623 |

*Forms of mental disease in patients discharged as recovered during the year ended June 30, 1911.*

| | Male. | | Female. | | Total. |
|---|---|---|---|---|---|
| | White. | Colored. | White. | Colored. | |
| Toxic psychoses—exogenous: | | | | | |
| Alcoholic psychoses— | | | | | |
| Acute hallucinos | 8 | 2 | 1 | | 11 |
| Acute psychosis, unclassified | | | 2 | | 2 |
| Chronic alcoholism | 6 | 1 | | | 7 |
| Delerium tremens | | | | 1 | 1 |
| Manic-depressive psychoses | 18 | 2 | 3 | 12 | 35 |
| Dementia præcox: | | | | | |
| Hebrephrenic form | 17 | 2 | 1 | 1 | 21 |
| Catatonic form | 9 | | | | 9 |
| Paranoid form | 1 | 1 | | 1 | 3 |
| Unclassified | 19 | 7 | 6 | 1 | 33 |
| Excitement, unclassified | 2 | 1 | | 2 | 5 |
| Depression: | | | | | |
| Unclassified | 10 | 1 | 4 | | 15 |
| Symptomatic | 1 | | | | 1 |
| Anxiety psychosis | 1 | | | | 1 |
| Prison psychosis | 1 | | | | 1 |
| Psychosis associated with— | | | | | |
| Epilepsy | | 1 | | | 1 |
| Hysteria | | | 1 | | 1 |
| Arterio-sclerosis | 6 | 1 | | 1 | 8 |
| Cerebral syphilis | 1 | | | | 1 |
| Cerebral traumatism | 2 | | | | 2 |
| Degeneracy | 1 | 2 | | | 3 |
| Involutional melancholia | | | 4 | | 4 |
| Amentia | 2 | | | | 2 |
| Undiagnosed | | 1 | 1 | | 2 |
| Total | 105 | 22 | 23 | 19 | 169 |

*Detailed statement of receipts and expenditures for the fiscal year ending June 30, 1910—additional.*

RECEIPTS.

| | |
|---|---|
| On hand, as stated in last annual report: | |
| Support | $5,217.39 |
| Repairs | 152.62 |
| Auditor's settlements (see Power, heating, and lighting) | 8,979.87 |
| Appropriation (deficiency act—repairs) | 801.38 |
| Disallowance | .06 |
| | 15,151.32 |

EXPENDITURES.

| | | |
|---|---|---|
| Provisions and stores: Laundry supplies | | 266.00 |
| Medical supplies: | | |
| Medical supplies | $2.88 | |
| Laboratory supplies | 493.00 | |
| | | 495.88 |
| Miscellaneous: | | |
| Messages | .44 | |
| Transportation of patients | 30.75 | |
| | | 31.19 |
| Farm and garden: Horticultural supplies | | 220.58 |
| Books and stationery: Books | | 2.50 |
| Repairs: Engineer's supplies | | 954.00 |
| Balance in U. S. Treasury: Support | | 13,181.17 |
| | | 15,151.32 |

*Summary of receipts and expenditures for the fiscal year ending June 30, 1911.*

RECEIPTS.

| | | |
|---|---|---|
| Appropriated for— | | |
| Support | | $327,800.00 |
| District of Columbia patients | | 302,051.01 |
| Marine-Hospital Service patients | | 10,392.43 |
| Repairs | | 40,000.00 |
| Buildings and grounds | | 5,000.00 |
| Power, heating, and lighting plant | | 60,000.00 |
| Board of patients | | 45,947.13 |
| Sale of stock, etc | | 5,970.26 |
| Disallowances | | 22.77 |
| On hand: | | |
| Buildings and grounds | | 13,857.05 |
| Power, heating, and lighting plant | $71,293.96 | |
| Power, heating and lighting plant, by auditor's settlement (see Support) | 8,979.87 | |
| | | 62,314.09 |
| | | 873,354.74 |

EXPENDITURES.

| | |
|---|---|
| Provisions and stores: | |
| Class 1. Farinaceous food | 33,560.40 |
| Class 2. Yeast | 629.17 |
| Class 3. Meats, fresh | 53,466.07 |
| Class 4. Poultry | 4,114.49 |
| Class 5. Meats, salt and smoked | 29,528.95 |
| Class 6. Fish, fresh | 5,311.19 |
| Class 7. Fish, salt | 3,080.09 |
| Class 8. Vegetables, fresh | 7,716.11 |
| Class 9. Vegetables, canned | 2,240.56 |
| Class 10. Fruits, fresh | 1,231.81 |
| Class 11. Fruits, dried | 2,623.67 |
| Class 12. Preserves and jellies | |
| Class 13. Dairy products | 25,626.76 |
| Class 14. Groceries, wet | 7,370.29 |
| Class 15. Groceries, dry | 28,186.31 |
| Class 16. Condiments | 77.99 |
| Class 17. Laundry supplies | 7,139.94 |

EXPENDITURES—continued.

| | | |
|---|---|---|
| Provisions and stores—Continued. | | |
| Class 18. Crockery and china | $1,445.54 | |
| Class 19. Tin and iron ware | 818.36 | |
| Class 20. Cutlery and plated ware | 190.63 | |
| Class 21. Household supplies | 4,542.15 | |
| Class 22. Woodenware | ---------- | |
| Class 23. Toilet articles | 987.40 | |
| Class 24. Fuel | 60,095.36 | |
| | | $279,983.24 |
| Furniture and bedding: | | |
| Class 25. Furniture | 1,523.13 | |
| Class 26. Bedding | 9,008.33 | |
| Class 27. Window furniture | 797.38 | |
| Class 28. Table linen | 1,517.82 | |
| Class 29. Upholstery and furniture material | 19.25 | |
| Class 30. Sewing machine supplies | 106.62 | |
| | | 12,972.03 |
| Dry goods and clothing: | | |
| Class 32. Clothing, new | 2,913.26 | |
| Class 33. Clothing material | 11,439.68 | |
| Class 34. Hats, straw | 140.50 | |
| Class 35. Hats, felt | 409.50 | |
| Class 36. Hosiery | 300.00 | |
| Class 37. Haberdashery | 468.05 | |
| Class 38. Shoes and slippers, men's | 4,636.46 | |
| Class 39. Shoes and slippers, women's | 424.80 | |
| | | 20,732.25 |
| Medical supplies: | | |
| Class 40. Medical supplies | 3,614.27 | |
| Class 41. Surgical supplies | 1,452.29 | |
| Class 42. Laboratory supplies | 256.02 | |
| | | 5,322.58 |
| Farm and garden: | | |
| Class 43. Wagons and harness | 690.79 | |
| Class 44. Farm and garden implements | 248.28 | |
| Class 45. Lawns, roads, and grounds | 88.23 | |
| Class 46. Farm supplies | 1,072.35 | |
| Class 47. Horticultural supplies | 987.32 | |
| Class 48. Stable maintenance | 63.50 | |
| Class 49. Live stock | 2,995.00 | |
| Class 50. Farm feed | 6,382.50 | |
| Class 51. Dairy feed | 13,640.47 | |
| Class 52. Poultry feed | 732.35 | |
| | | 26,900.79 |
| Miscellaneous: | | |
| Class 53. Entertainment of patients | 2,071.09 | |
| Class 54. Traveling expenses | 22.00 | |
| Class 55. Supply transportation | 22.54 | |
| Class 56. Return of escaped patients | 169.00 | |
| Class 57. Messages | 1,260.32 | |
| Class 58. Advertisements | --------- | |
| Class 59. Miscellaneous | 916.66 | |
| Class 60. Transportation of patients | 187.85 | |
| | | 4,649.46 |
| Books and stationery: | | |
| Class 61. Stationery supplies | 969.39 | |
| Class 62. Printing | 31.70 | |
| Class 63. Books | 331.45 | |
| Class 64. Periodicals | 399.43 | |
| | | 1,731.97 |
| Construction: | | |
| Class 65. Engineers' supplies | 3,103.90 | |
| Class 66. Electrical supplies | 2,112.67 | |
| Class 67. Carpenters' supplies | 852.79 | |
| Class 68. Tinners' supplies | 271.68 | |
| Class 69. Painters' supplies | 2,264.14 | |
| | | 8,605.18 |

EXPENDITURES—continued.

| | | |
|---|---|---|
| **Repairs:** | | |
| Class 70. Pay roll | $22,480.87 | |
| Class 71. Engineers' supplies | 5,490.78 | |
| Class 72. Carpenters' and builders' supplies | 3,030.76 | |
| Class 73. Tinners' supplies | 52.79 | |
| Class 74. Painters' supplies | 500.00 | |
| Class 75. Construction | 5,169.40 | |
| | | $36,724.60 |
| **Buildings and grounds:** | | |
| Class 76. Pay roll, roadways, grading, and walks | 2,643.13 | |
| Class 77. Roadways, grading, and walks | 917.38 | |
| Class 78. Furniture, new buildings | ---------- | |
| Class 79. Furnishings, assembly hall | 1,895.75 | |
| Class 80. Power, heating, and lighting plant | 32,292.98 | |
| | | 37,749.24 |
| **Pay roll:** | | |
| Class 81. Officers | 30,492.24 | |
| Class 82. Administrative | 27,810.11 | |
| Class 83. Ward service | 117,741.92 | |
| Class 84. Domestic service | 3,220.68 | |
| Class 85. Kitchen service | 24,529.20 | |
| Class 86. Industrial | 5,624.33 | |
| Class 87. Laundry service | 12,015.74 | |
| Class 88. Fire service | 525.00 | |
| Class 89. Engineers | 33,458.93 | |
| Class 90. Carpenters and builders | 5,020.22 | |
| Class 91. Tinners | 1,082.00 | |
| Class 92. Construction | 2,180.70 | |
| Class 93. Painters | 4,429.07 | |
| Class 94. Electricians | 7,459.37 | |
| Class 95. Farm and garden | 16,521.38 | |
| Class 96. Stable service | 6,467.52 | |
| Class 97. Dairy and cow barns | 4,296.20 | |
| Class 98. Lawns and grounds | 5,705.77 | |
| | | 308,580.38 |
| **On hand:** | | |
| Support | 22,864.21 | |
| Repairs | 3,109.71 | |
| Buildings and grounds | 12,816.69 | |
| Power, heating, and lighting plant | 90,028.31 | |
| **Covered into United States Treasury to close appropriation lapsed into surplus fund—act of Congress approved Mar. 4, 1909—buildings and grounds** | 584.10 | |
| | | 129,403.02 |
| Total | | 873,354.74 |

The following summaries of population and expenditures have been prepared in accordance with a resolution of the National Conference of Charities and Corrections, adopted May 15, 1906:

*Summary of population.*

| | Male. | Female. | Total. |
|---|---|---|---|
| Number of patients at beginning of fiscal year | 2,193 | 723 | 2,916 |
| Number of patients received during the year | 443 | 180 | 623 |
| Number of patients discharged or died during year | 520 | 157 | 677 |
| Number of patients at end of fiscal year | 2,116 | 746 | 2,862 |
| Daily average number of patients | 2,143 | 741 | 2,884 |
| Average number of officers and employees during year | 529 | 284 | 813 |

*Summary of expenditures.*

| | |
|---|---|
| Current expenses: | |
| Salaries and wages | $308, 580. 38 |
| Clothing | 20, 732. 25 |
| Subsistence | 272, 843. 30 |
| Ordinary repairs | 8, 605. 18 |
| Office, domestic, and outdoor expenses | 58, 716. 77 |
| Total | 669, 477. 88 |
| Extraordinary expenses: | |
| New buildings, land, etc | 37, 749. 24 |
| Permanent improvements to existing buildings | 36, 724. 60 |
| Total | 74, 473. 84 |
| Grand total | 743, 951. 72 |

# REPORT OF THE COLUMBIA INSTITUTION FOR THE DEAF.

## OFFICERS OF THE INSTITUTION.

*Patron.*—William Howard Taft, President of the United States.

*President.*—Percival Hall, M. A.

*Secretary.*—Charles S. Bradley, Esq.

*Treasurer.*—George X. McLanahan, Esq.

*Directors.*—Hon. George C. Perkins, Senator from California; Hon. Thetus W. Sims, Member of Congress from Tennessee; Hon. E. L. Taylor, jr., Member of Congress from Ohio, representing the Congress of the United States; Edward Miner Gallaudet, Ph. D., LL. D., of Connecticut; Hon. John W. Foster; Hon. Francis M. Cockrell; R. Ross Perry, Esq.; Theodore W. Noyes, Esq., of the District of Columbia; John B. Wight, Esq., of New York.

## FACULTY OF GALLAUDET COLLEGE.

*Emeritus president and professor of moral and political science.*—Edward Miner Gallaudet, Ph. D., LL. D.

*President and professor of applied mathematics and pedagogy.*—Percival Hall, M. A.

*Vice president and professor of languages.*—Edward A. Fay, M. A., Ph. D.

*Emeritus professor of natural science and lecturer on pedagogy.*—Rev. John W. Chickering, M. A.

*Professor of English and history.*—J. Burton Hotchkiss, M. A., Litt. D.

*Professor of mathematics and Latin.*—Amos G. Draper, M. A., Litt. D.

*Professor of natural science.*—Charles R. Ely, M. A., Ph. D.

*Professor of physics and biology.*—Herbert E. Day, M. A.

*Professor of Latin.*—Allan B. Fay, M. A.

*Instructor in English and in charge of college women.*—Elizabeth Peet.

*Instructor in mathematics and engineering.*—Isaac Allison, E. E.

*Instructor in gymnastics.*—Albert F. Adams, M. A.

*Instructor in drawing.*—Arthur D. Bryant, B. Ph.

*Instructor in gymnastics and librarian.*—Helen Northrop, B. A.

## DEPARTMENT OF ARTICULATION.

*Professor in charge.*—Percival Hall, M. A.

*Instructor.*—Annie E. Jameson.

*Normal fellows.*—Victor Skyberg, St. Olaf College, Minn.; Edmiston W. Iles, University of Kansas; Henry Vigour, Baker University, Kans.; Beatrice Minhinnette, Shorter College, Ga.

*Normal student.*—Grace Long, Council Bluffs High School, Iowa.

## FACULTY OF THE KENDALL SCHOOL.

*President.*—Percival Hall, M. A.

*Principal.*—Lyman Steed, M. A.

*Instructors.*—Melville Ballard, M. S.; Sarah H. Porter, M. A.; Clara Taliaferro; Helen Fay; Musa Marbut, M. A.; M. Edetha Williams, B. A.

*Instructor in art and manual training.*—Gertrude L. Dunn.

*Instructor in cooking.*—Adelaide Waring.

*Instructor in sewing.*—Lydia Suman.

## DOMESTIC DEPARTMENT.

*Supervisor and disbursing agent.*—Louis L. Hooper, M. A.

*Attending physician.*—D. Kerfoot Shute, M. D.

*Matron.*—Mary E. Schenck.

*Matron, Kendall School, boys.*—Mrs. C. A. R. Crossley.

*Matron, Kendall School, girls.*—Harriet Vandeventer.

*Boys' Supervisor.*—G. W. Harlow.

*Girls' Supervisor.*—Elizabeth M. Paul.

*Gardener.*—Edward Mangum.

*Farmer.*—Harley D. Drake, B. A.

# FIFTY-FOURTH ANNUAL REPORT OF THE COLUMBIA INSTITUTION FOR THE DEAF.

COLUMBIA INSTITUTION FOR THE DEAF,
*Kendall Green, Washington, D. C., September 29, 1911.*

SIR: The number of pupils and students remaining in the institution July 1, 1910, was 107; admitted during the year, 22; admitted for the school year 1911–12, 33. Total, 162 (89 males, 73 females). From July 1, 1910 to July 1, 1911, there were under instruction 74 males and 55 females, a total of 129, of whom 76 have been in the collegiate department, representing 30 States, the District of Columbia and Canada, and 53 in the primary department. Of these, 37 were admitted as beneficiaries of the District of Columbia. During the fiscal year 25 were discharged from the institution by graduation and otherwise.

A list of the names of students and pupils who have been under instruction in this institution since July 1, 1910, will be found appended to this report

## HEALTH.

Excellent health has prevailed during the year among nearly all the students and pupils. There were two mild cases of measles and two of mumps.

Two cases requiring surgical treatment, one for rheumatism and the other for appendicitis, were skillfully and successfully cared for at the George Washington University Hospital.

## CHANGES IN THE CORPS OF OFFICERS AND TEACHERS.

Dr. Edward M. Gallaudet, the founder of this institution, and its president for almost half a century, resigned in May, 1911.

Mr. Percival Hall was appointed to fill his place.

An account of the exercises of May 10, when Dr. Gallaudet formally resigned and Mr. Hall was installed as his successor, will be found in the appendix.

Dr. Gallaudet was appointed a member of the board, to take the place of Justice David Brewer, deceased, so the institution will continue to enjoy Dr. Gallaudet's valuable services.

Miss Mary Edetha Williams, a graduate of Gallaudet College of the year 1909, has been appointed instructor in the Kendall School.

Mr. Wallace G. Fowler, for many years supervisor and disbursing agent for the institution, resigned at the end of the fiscal year, 1911. His place has been filled by the appointment of Mr. Louis L. Hooper.

Mrs. C. A. R. Crossley has been appointed matron for the Kendall School boys, in place of Miss Sadie Fletcher.

Mr. G. W. Harlow takes the place of Mr. Charles A. Bowles as supervisor for the Kendall School boys, and Miss Elizabeth M. Paul succeeds Miss Slava Snyder as supervisor for the girls.

At a meeting of the board of directors in May, 1911, it was decided to separate the gardening and greenhouse work and care of the grounds from that of the farm and dairy.

Mr. Edward Mangum, for many years farmer and head gardener, will continue in charge of the grounds and greenhouses, and Mr. Harley D. Drake, of the class of 1904, Gallaudet College, who has had considerable practical experience as a farmer and dairyman, has been appointed to take charge of the farm and dairy.

## COURSE OF INSTRUCTION.

The new course of instruction, begun in the fall of 1909 in the college, was carefully reported in the last annual report.

The required course has been continued without change.

It is proposed to add to the optional studies library work, with our own librarian, Miss Helen Northrop, in charge; domestic science, and work in dairying and gardening, under the direction of the institution officers.

## LECTURES.

The following special lectures have been delivered during the year:

### IN THE COLLEGE.

The Lorna Doone Country, by President Edward M. Gallaudet.
The American Frontier, by Dr. Edward A. Fay.
The Greek Athletic Education, by Dr. Hotchkiss.
A Trigonometrical Summer, by Dr. Draper.
Our Insect Friends and Enemies, by Dr. Ely.
Le Chanticler, by Prof. A. B. Fay.
The Southern Industrial Education Association, by Prof. Day.

### IN THE KENDALL SCHOOL.

Short Stories, by Mr. Steed.
The Three Wise Men, by Mr. Ballard.
Fairy Tales, by Mr. Lee.
Stories Told by a Father to His Son, by Mr. Stevenson.
An Indian Buffalo Hunt, by Mr. Bowles.
King of the Golden River, by Miss Maud Peet.
The Lion and Androcles, by Miss Michaels.

## RECEIPTS AND EXPENDITURES.

The balance from the fiscal year ended June 30, 1910, was $406.77; receipts from the Treasury of the United States for maintenance, $77,000; from board and tuition and miscellaneous sources, $6,759.26; total, $84,146.03.

The usual appropriation of $5,000 for special repairs and improvements was received, and was all expended on very much needed work on buildings and grounds.

The special appropriation of $25,000 for the rebuilding of the dormitory, partially destroyed by fire on February 6, 1910, was made available for equipment, furniture, and paving adjacent to this dormitory, and was entirely expended for these purposes, making possible the restoration of the college men's building.

The expenditures for the support of the institution for the fiscal year ended June 30, 1911, were $83,210.35, leaving a balance on hand of $935.68.

A detailed account of expenditures for the year is given below.

*Receipts and expenditures, maintenance of institution.*

RECEIPTS.

| | |
|---|---|
| Balance from old account | $406.77 |
| From the Treasury of the United States | 77,000.00 |
| Board and tuition | 5,307.82 |
| Books | 239.92 |
| Live stock | 610.00 |
| Clothing | 24.45 |
| Medical services | 70.00 |
| Milk | 338.87 |
| Miscellaneous | 148.20 |
| Total | 84,146.03 |

EXPENDITURES.

| | |
|---|---|
| Salaries and wages | 46,717.62 |
| Miscellaneous repairs | 2,263.26 |
| Household and marketing | 3,627.13 |
| Meats | 4,567.35 |
| Groceries | 2,554.73 |
| Butter and eggs | 2,196.76 |
| Bread | 1,444.88 |
| Medical attendance and nursing | 1,027.20 |
| Telephone, electric clock, and fire alarms | 351.66 |
| Furniture | 411.23 |
| Dry goods | 915.01 |
| Gas | 1,263.46 |
| Fuel | 4,874.09 |
| Feed | 1,943.25 |
| Medicines and chemicals | 292.47 |
| Books and stationery | 1,052.40 |
| Hardware | 909.00 |
| Plants, seeds, and tools | 1,465.89 |
| Blacksmithing | 304.86 |
| Wagon and carriage repairing | 367.55 |
| Ice | 486.88 |
| Live stock | 2,167.85 |
| Incidental | 1,142.56 |
| Stamped envelopes | 50.23 |
| Auditing accounts | 225.00 |
| Printing | 397.68 |
| Lectures | 57.50 |
| Clothing | 132.85 |
| Balance | 935.68 |
| Total | 84,146.03 |

*Receipts and expenditures, special repairs.*

RECEIPTS.

| | |
|---|---|
| From the Treasury of the United States | $5,000.00 |

EXPENDITURES.

| | |
|---|---|
| Electric supplies | 142.50 |
| Steam fitting | 913.76 |
| Repairs to pavements | 2,104.15 |
| Pebble dashing houses | 995.00 |
| Plumbing | 145.75 |
| Painting and supplies | 304.88 |
| Furnace repairs and tinning | 308.96 |
| Fire escape | 85.00 |
| Total | 5,000.00 |

*Receipts and expenditures, rebuilding and equipping dormitory.*

RECEIPTS.

| | |
|---|---|
| From the Treasury of the United States | $25,000.00 |

EXPENDITURES.

| | |
|---|---|
| Carpentering | 2,246.25 |
| Lumber | 1,973.03 |
| Tiling | 528.93 |
| Electric fixtures | 811.29 |
| Paints, oils, etc | 1,177.31 |
| Painting | 1,351.55 |
| Plastering | 1,249.60 |
| Glazing | 80.00 |
| Plumbing | 626.00 |
| Plumbing materials | 1,209.04 |
| Metal ceilings | 2,064.59 |
| Papering | 711.60 |
| Supervising architect | 1,125.00 |
| Fire extinguishers, etc | 467.35 |
| Concrete flooring, etc | 1,040.80 |
| Roofing and tinning | 905.42 |
| Steam fitting | 483.67 |
| Hardware | 560.19 |
| Labor | 491.03 |
| Millwork, sashes, doors, etc | 524.35 |
| Slating | 638.00 |
| Masonry and supplies | 948.00 |
| Repairs to walks and drives | 841.00 |
| Furniture, etc | 2,946.00 |
| Total | 25,000.00 |

## ESTIMATES FOR THE FISCAL YEAR ENDING JUNE 30, 1913.

The following estimates for the year ending June 30, 1913, have already been submitted.

For the support of the institution, including salaries and incidental expenses for books and illustrative apparatus and for general repairs and improvements, $78,550.

For repairs to the buildings of the institution, including plumbing and steamfitting, and for repairs to pavements within the grounds, $10,000.

For the construction and furnishing of a dormitory to replace the old one now used for college women and officers, $75,000; of which sum not more than $3,000 may be used for the construction or renting of temporary quarters for the accommodation of those usually housed in said dormitory.

The sum asked for special repairs is $5,000 more than that usually allowed this institution. It is necessary for extensive repairs to the main kitchen, for providing proper store room for food and supplies that will be convenient to the kitchen, and for arranging a room for domestic science work for the students of this institution.

A new dormitory for the young ladies of the college is an absolute necessity. The present structure is the oldest building in use by the institution for such purposes, having been erected in 1859 and shortly after. It is with difficulty kept in a sanitary condition. It is not at all fireproof, nor is its arrangement such that thorough fire protection can be given to the deaf young women residing therein. The proposed new building is the most urgent present need of the institution.

## CHANGE OF NAME OF THE INSTITUTION.

By the sundry civil act approved March 4, 1911, the name of the institution was changed from Columbia Institution for the Deaf and Dumb to Columbia Institution for the Deaf.

## VISITS TO SCHOOLS.

During the month of May the president of the institution visited schools for the deaf in New York City, Philadelphia, Trenton, Edgewood Park, Pa., Columbus, Ohio, Indianapolis, and Jacksonville, Ill., to study methods employed in the various schools, and to increase, if possible, interest in the higher education of the deaf.

## MEETING OF THE CONVENTION OF AMERICAN INSTRUCTORS.

A meeting of the Convention of American Instructors of the Deaf was held at Delavan, Wis., from July 6 to 13, 1911.

At this meeting many interesting papers were read and discussions held on topics connected with the education of the deaf. There was also a fine exhibit of art work and manual training from many institutions for the education of the deaf in various parts of the country.

This institution was represented on the program by Dr. E. A. Fay, vice president of the college, and by Profs. Draper, Day, and A. B. Fay. The president of the institution and a number of our teachers were also in attendance.

The meeting was one of the largest of its kind ever held in this country, and was remarkable for the attendance of a large number of educated deaf people, now engaged in teaching in various schools for the deaf.

It is interesting to note that almost all of them were graduates of this institution.

## EXERCISES OF PRESENTATION DAY.

The public anniversary of the college was held in the college chapel on Wednesday, May 10.

Rev. Herbert Draper Gallaudet, associate minister, Central Congregational Church, Boston, offered the opening prayer.

The orations and dissertations, delivered by members of the graduating class, were as follows:

Scientific Farming in the South, George Hubbard Bailey, North Carolina.
Mechanical Dentistry; A New Field for the Deaf, by Edwin Winfred Nies, New York.
The Commercial Utilization of Waste Products, Leslie Andrew Elmer, California.

## PRESENTATION OF CANDIDATES FOR DEGREES.

Dr. Edward A. Fay, vice president of the college, presented the candidates for degrees.

*For the degree of master of arts.*

Normal Fellows.

| | |
|---|---|
| MARY BESS MICHAELS, B. A., Vassar College, New York. | MADISON JEFFERSON LEE, B. A., M. A., Central University, Kentucky. |

*For the degree of bachelor of arts.*

George Hubbard Bailey.
Ethel Fannie Eaton.
Leslie Andrew Elmer.
Homer Earl Grace.
John Tom Hower.
Henry Stevens Morris, jr.
Goldie Annie Newman.
Edwin Winfred Nies.
Emma Lovina Pike.
Elmer Dovico Talbert.

*For the degree of bachelor of science.*

William Baxter Mosby.

*For the degree of bachelor of philosophy.*

Bird Lee Craven.
Iva Merritt Robinson.

*For the degree of bachelor of letters.*

Mary Matilda Fossan.

Normal Students.

**Maud H. Peet**, Yonkers High School, New York.
**Elwood A. Stevenson**, Brooklyn High School, New York.
**Carl P. Bowles**, Colgate University, New York.

A part of the program was devoted to the installation of President Hall.

Addresses were made on behalf of the board of directors by the Hon. Thetus W. Sims, and for the alumni of the college by Dr. Robert Patterson. On behalf of the neighboring colleges, by Dr. Thomas Fell, president of St. John's College, Annapolis.

Dr. J. R. Dobyns, superintendent of the Mississippi School for the Deaf, represented the schools for the deaf of the United States.

Dr. Edward Miner Gallaudet made a brief farewell address, and the new president a short response.

The Hon. John W. Foster, on behalf of the board of directors, presented to Dr. Gallaudet a beautiful loving cup of silver.

The exercises were closed by a benediction by the Rev. Oliver J. Whildin, missionary to the deaf, southern diocese.

A more detailed account of these exercises will be found in the appendix.

## CONFERRING OF DEGREES.

On the closing day of the term, June 21, degrees were conferred in accordance with the recommendations of presentation day upon all the candidates who had complied with the requirements of the faculty, except that Mr. Bird Craven, having removed conditions, was granted the degree of bachelor of arts instead of bachelor of philosophy.

All of which is respectfully submitted by order of the board of directors.

Percival Hall, *President.*

The Secretary of the Interior.

## REGULATIONS.

I. The academic year is divided into three terms, the first beginning on the Thursday before the last Thursday in September, and closing on the 24th of December; the second beginning the 2d of January and closing the last of March; the third beginning the 1st of April and closing the Wednesday before the last Wednesday in June.

II. The vacations are from the 24th of December to the 2d of January and from the Wednesday before the last Wednesday in June to the Thursday before the last Thursday in September.

III. There are holidays at Thanksgiving, Washington's Birthday, Easter, and Decoration Day.

IV. The pupils may visit their homes during the regular vacations and at the above-named holidays, but at no other time unless for some special urgent reason, and then only by permission of the president.

V. The bills for the maintenance and tuition of pupils supported by their friends must be paid semiannually in advance.

VI. The charge for pay pupils is $350 per annum. This sum covers all expenses in the primary department except clothing, and all in the college, except clothing and books and extraordinary medical attention.

VII. All deaf-mutes of teachable age, of good mental capacity, and properly belonging to the District of Columbia, are received without charge. To students from the States and Territories who have not the means of defraying all the expenses of the college course the board of directors renders such assistance as circumstances seem to require, so far as the means at its disposal will allow.

VIII. It is expected that the friends of the pupils will provide them with clothing, and it is important that upon entering or returning to the institution they should be supplied with a sufficient amount for an entire year. All clothing should be plainly marked with the owner's name.

IX. All letters concerning pupils or applications for admission should be addressed to the president.

X. The institution is open to visitors during term time on Thursdays only between the hours of 9 a. m. and 3 p. m. Visitors are admitted to chapel services on Sunday afternoons at 3 o'clock.

## CATALOGUE OF STUDENTS AND PUPILS.

### IN THE COLLEGE.

- Arizona:
  - Ethel F. Eaton.
- Arkansas:
  - Ora H. Blanchard.
  - A. W. Patterson.
- California:
  - Leslie A. Elmer.
  - Edith Nelson.
- Colorado:
  - Mabel J. Jensin.
  - John C. Clesson.
  - Harry Gardner.
  - Winfield Roller.
- Connecticut:
  - Walter C. Rockwell.
  - Michael Lapides.
- District of Columbia:
  - Maud E. Edington.
  - Henry J. Stegemerten.
- Georgia:
  - Henry S. Morris.
- Idaho:
  - Clifford M. Thompson.
- Illinois:
  - Goldie A. Newman.
  - Iva M. Robinson.
- Indiana:
  - Leon P. Jones.
- Iowa:
  - Luverne S. Byrne.
  - Hubert M. West.
  - Leonard Rendall.
  - Arthur Rasmusson.
  - Florence Hetts.
  - Fern Herrington.
  - Jessie Litzenberg.
  - Pearl Pollock.
  - Grace Evans.

- Kansas:
  - Dora Campbell.
  - Ralph Decker.
  - Edward S. Foltz.
  - John T. Hower.
  - Homer E. Grace.
  - Fred Moore.
  - Cora A. Denton.
  - William Schafer.
  - Ethel Wickham.
  - Ruth Williams.
- Kentucky:
  - Adolph N. Struck.
  - Ashland Martin.
  - Kate H. Martin.
  - Amy Fowler.
- Manitoba:
  - Archibald Wright, jr.
- Maryland:
  - William F. Miller.
- Minnesota:
  - Mary M. Fossan.
  - Petra F. Fandrem.
  - John M. Jacobson.
- Mississippi:
  - Shelby W. Harris.
- Missouri:
  - Elmer Talbert.
  - Jennie F. Susman.
  - Russell R. Shannon.
  - Carl Smith.
  - Ruby McCullough.
- Nebraska:
  - Vernon Butterbaugh.
  - Charles Blasing.
  - Anna V. Johnson.
  - Ruia Burt.
  - Harriet Bauman.
  - Eugene Hogle.
  - Nellie Johnson.
  - Stacia Kuta.
  - Eva Redmon.
  - R. W. Mullin.
  - Frank A. Andrewjeski.
  - Gladys Clark.
- New York:
  - Edwin W. Nies.
  - Vernon S. Birck.
  - Margaret S. Sherman.
- New York—Continued.
  - Frederick F. Fancher.
  - Clinton B. F. Ensworth.
- North Carolina:
  - Emma L. Pike.
  - Geo. H. Bailey.
  - Virgie A. Haywood.
  - Oscar Hunter.
- North Dakota:
  - Olga Anderson.
- Ohio:
  - Wm. H. Arras.
  - Helena Froelich.
  - Ruth Knox.
  - Frances Rumsey.
  - Kreigh Ayers.
  - Emma Neuman.
- Oregon:
  - Bird S. Craven.
- Pennsylvania:
  - Emily A. S. Blackwood.
  - Mary H. Burns.
  - Hume L. Battiste.
  - J. Wilbur Gledhill.
  - Frederick H. Hughes.
  - W. G. Durian.
  - Rebecca Rosenstein.
  - Louise Sadelmyer.
- South Carolina:
  - Annie L. Dwight.
- Texas:
  - Mary B. Sharp.
  - Thomas L. Anderson.
  - Grover C. Farquar.
- Utah:
  - Alfred C. Keeley, jr.
  - Kate Orr Keeley.
- Washington:
  - Alice S. Hammond.
  - Elsie T. Peterson.
  - Mabel Scanlon.
  - Arthur B. Classen.
  - Frank H. Thompson.
- West Virginia:
  - E. E. Sparks.
- Wisconsin:
  - Harold Linde.
- Wyoming:
  - W. Baxter Mosey.

### KENDALL SCHOOL.

- Colorado:
  - Winfield I. Roller.
- Connecticut:
  - Walter C. Rockwell.
- Delaware:
  - Robert Johnston.
  - Harry Miller.
  - Raymond Webb.
- District of Columbia:
  - Raymond Allen.
  - Benjamin Beaver.
  - Antonio Cichino.
  - William Conway.
  - Frank Berman.
  - Morton W. Galloway.
- District of Columbia—Continued.
  - William A. Gray.
  - Frederick D. Hill.
  - William U. Lynch.
  - John C. Miller.
  - Lee Minter.
  - Cecil Moore.
  - James A. Nash.
  - Louis Pucci.
  - Francis E. Ridgeway.
  - Leonard Stark.
  - Joseph Stinson.
  - Charles Sullivan.
  - Henry Stegemerten.
  - Robert Werdig.

New York:
- Clinton F. C. Ensworth.
- Robert E. Conley.

North Carolina:
- Robert Bulluck.

West Virginia:
- Ruric N. Marshall.

Delaware:
- Ida Ellingsworth.
- Florence Johnston.
- Ellen J. McCabe.
- Olivia Peterson.
- Pearl Roberts.
- Mabel M. Sines.

District of Columbia:
- Annie Ball.
- Mary E. Blocher.
- Myrtle E. Connick.
- Madeline Glenn.
- Louise Golding.

District of Columbia—Continued.
- Frances Goetz.
- Elsie Hutchins.
- Fannie Hoke.
- Matilda Maddox.
- Annie P. Neitzey.
- Virgie E. O'Neill.
- Pearl J. Pearson.
- Sophia Stansbury.
- Laura Sykes.
- Alice Woolford.
- Florence Young.
- Mildred Mojonnier.

West Virginia:
- Narcissa Watts.
- Lulu Watts.
- Roxie Wickline.

Ontario:
- Elsie Burke.

# APPENDIX.

## ADDRESSES DELIVERED AT THE PRESENTATION EXERCISES OF GALLAUDET COLLEGE ON THE OCCASION OF THE INSTALLATION OF PRESIDENT HALL, MAY 10, 1911.

### A Prayer at Kendall Green, by Rev. Herbert Gallaudet.

O Thou Giver of every good and perfect gift, our God, from whom all holy desires, all good counsels, and all just works do proceed, our Father; whose loving care protecteth and guideth us with strong and tender hands, we beseech Thee, grant unto this institution where Thy love and life in Jesus Christ have been in so many ways manifested in the past, the further evidence and assurance of Thy mercy, truth, and grace.

With full and grateful hearts we thank Thee for Thy guidance through the years; for the light of the knowledge of Thy glory made plain by the ministry of these college halls; for the lives here devotedly given for the victory of a great ideal; for the lives devotedly going out from here to service and helpfulness among their kind. We thank Thee for all that this institution has meant in the past and means to-day; for the hopes that have centered here; for the sacrifices that have been freely rendered for the common good; for the life purposes that have here found inspiration and motive and leading. We pray that thy blessing may be upon all who labor or have labored here, establishing their labors in Thy good time and way. We pray Thy especial blessing may be upon them who bear the greater burden, upon him who lays it down, and upon him who now takes it up, that they may see the work of their hands and be satisfied, knowing that it is Thy work, and only to be done in Thy name.

Grant wisdom and guidance, we beseech Thee, in all the coming time, a yet fuller measure of Thy truth, a yet larger portion of Thy spirit, a yet nobler devotion to Thy ideal of character and service in the name of Jesus Christ. And in his name we ask it all, pledging Thee the glory. Amen.

### Address of Hon. Thetus W. Sims.

Mr. President: The Columbia Institution for the Deaf was chartered by Congress in 1857. In 1864 the collegiate department was authorized by a special act of Congress, and provision was soon made for the free admission to this department of worthy deaf-mute youth from any of the States and Territories of the Union.

The number of free scholarships was at first only 10, but there are now 100; and 75 are at present filled by students representing 33 States and the District of Columbia. Those from the States are admitted on the recommendation of Members of Congress approved by the Secretary of the Interior.

In the management of the institution Congress is represented on the board of directors by a Senator, appointed by the President of the Senate, and two Members of the House, appointed by the Speaker. The President of the United States is ex officio patron of the institution.

More than 900 students, representing all the States of the Union, have had the benefit of the training given by the college, and they have proved in their after lives that the advanced education afforded them here has greatly increased their usefulness and added to their happiness.

Nothing perhaps is more conclusive evidence that this is a national institution than has just been shown by reading the list of graduates or those receiving degrees, as nearly every one comes from a different State in the Union.

I do not think there could be a higher object of national consideration than the objects and purposes of this and similar institutions. Therefore I do not think the public funds of the National Government, acquired by public taxation, could be used for a more beneficent general public purpose.

## Address of Dr. Robert Patterson.

Mr. President, ladies, and gentlemen: To every college man his alma mater is dear. In it he takes just pride, and bestows on it devout homage. This devotion keeps up the fire of enthusiasm for continuous improvement in the institution and the individual alike.

Would it be claiming too much to say that our college means more to its alumni than do colleges for the hearing to their alumni? We stand on holy ground; here is the battlefield on which was fought to a successful issue the proposition whether or not the deaf were equal to the pursuit of higher education. This is the only college that keeps open the gateway to higher attainments for the deaf.

On this occasion a host of memories comes up from the past, and all our thoughts center on the chief figure in the history of our alma mater, our leader in the arena of action. What makes his leadership the more interesting and inspiring is the fact that he is a worthy son of the distinguished pioneer, Thomas Hopkins Gallaudet, who blazed the way for the education of the deaf in our country so early as 1817. His leadership had its germination in a prediction which he caught, in his boyhood, from the lips of his father to the effect, that a college for the deaf was a possibility in the horizon of the future.

This prediction inspired in him a resolution to follow in the footsteps of his father and consecrate his life to the service and uplift of the deaf. When he stood up on the 28th of June, 1864, to be installed as president of the college dedicated on that day to the deaf, he was possessed of no wild spirit of adventure, his soul was steadied with a calm faith and determination to turn the prophecy of his father to a reality.

This faith and determination gave him strength and courage to fight his battle against the forces of prejudice, doubt, and opposition that he encountered in his way, and he never wavered under the strain. Like Constantine of old, he saw the cross of his cause flaming in the sky and knew that by it he must conquer, and he pressed on to victory. How well he succeeded is told in the story of how this broad domain of Kendall Green became the home of the college, of how these beautiful buildings went up, of how free scholarships were obtained to insure the stability of the college. All honor to our gallant leader.

The work, the record, the influence of our alma mater, all attest that it has been well worth while. Almost a thousand graduates have gone forth from these walls, who otherwise might still be held down by the bonds of inferiority and limitation. We remember, do we not, how, as we were passing through the training afforded here, we awoke to a new life under the expanding intelligence and knowledge that came to us, and how the bars of the prison house in which our deafness confined us gave way one by one? And at length when the time came for us to leave these well beloved scenes, we had liberation; we began to get a different point of view on life, and power to face the future without fear. We went forward with something of eagerness and confidence to seek places in the business and the professional world, determined to make good, and we met with an attitude of friendly encouragement. We shrank not from the crucible of experience and came out with a larger capacity for appreciating the joys of the larger life, and for participating in the many activities and interests concentrated in efforts for the welfare of the human race. And the world, appreciative of our efforts, as it always is of all earnest endeavor, has not been slow in bestowing upon us its approbation and reward.

Our alma mater has stood the test to which it was put, and thus has won for itself a place in the world as a producer of human wealth, which, more than material wealth, is the glory and bulwark of a nation. The results which our college has achieved give to it a standing that fully justifies its permanent existence.

We are glad of an opportunity this afternoon to acknowledge publicly the debt we owe to our honored and beloved leader, Dr. Edward Miner Gallaudet, and to him we now turn.

Dr. Gallaudet, dear friend, this is a divine moment that stirs the emotions, as it brings us once more face to face. It gives us the privilege of saying in public what is felt and well understood, if not often enough expressed, between you and us. In launching this college and in guiding it with skill and success for so long, you fostered for us opportunities to develop powers for the realization of nobler human aspirations, and for the cultivation of ability to enter upon a higher plane in the world's activities. In so doing you conferred upon us the precious gift of your love, your wisdom, your courage, and your strength, and the inspiration of your personality, your character, and your ideals of life. Toward you our hearts are, as the beautiful line of Thomas Moore expresses it—

> Rich in deep hymns of gratitude and love!

and ever will we cherish you and all that you have given us of service and of soul.

Our regret that you have found it necessary to lay down the heavy burdens you have so long carried is tempered by the knowledge that the inspiration and helpfulness of your love will be continued in your graduates for years and years to come and exert an uplifting influence on those as yet unborn.

In retiring from active service as head of the college you carry with you our best and kindest wishes for health, happiness, and peace in the years yet to come. May God be good to you in the blessings of rest and change of occupation which you seek and so richly deserve.

In the full discharge of my mission, I now have the honor to deliver into your hands a message of love and gratitude from your "boys and girls." May it help to deepen in your heart the sense of comfort that springs from a consciousness of service done in blessing and enriching the lives of others.

President Percival Hall, it gives us pleasure to offer you in public sincere assurances of our unamimous and heartfelt congratulations upon falling heir to the mantle of your distinguished predecessor. Your elevation is a source of gratification to us because it is the choice of Dr. Gallaudet, based upon a deep conviction of your fitness to discharge the duties of your office. You shall always have our strong and true support in your efforts to meet the problems of the future and to promote the progress of the college; and be assured that, in the words of Henry Wadsworth Longfellow—

Our hearts, our hopes, are all with thee,
Our hearts, our hopes, our prayers, our tears,
Our faith triumphant o'er our fears,
Are all with thee—are all with thee!

## Address of Dr. J. R. Dobyns.

Members of the corporation, the faculty, students of the college, ladies, and gentlemen: I desire to express to the management of the college my sincere appreciation of the distinguished honor of being called to represent the schools for the deaf of this great country on such an important occasion and on a day that marks an epoch in the history of the instruction of the deaf as well as that of the life of the only college for their higher education in the world.

Conscious of this splendid presence and thinking of a Peet and a Kerr and a McIntyre and a Gillett and a Noyes and a Johnson, cotemporaries of one whom we delight to honor to-day and ideals of my own young manhood, whose very names are synonyms of that which is highest and purest and best and whose time and talents and energies were given, a freewill offering, to the advancement of the deaf, I feel a thrill of enthusiasm which I can not put into words.

The memory of their marked individualities, their superior mental and moral endowments, and the stainless records of their useful and unselfish lives help us to get a truer conception of the dignity and grandeur of the great work of the century that makes this happy experience to-day a part of our lives.

We are living in the crowning century of time, in the most wonderful country on the earth, under the best government the world has ever known, and among a people who excel the nations in industry, thrift, and enterprise. When we think of what has been done for the deaf and the character of the men and women who have done it, are we not justified in feeling that we stand for a cause which, in its purpose and extent and success, is in keeping with the energies of our people, the quality of our Government, the character of our country, and the progress of our times?

Statistics, to the uninterested, are always uninteresting, but to the interested ought always to be interesting. I am confident there are many whose lives are identified with the deaf and who think more about their training and education than they do about any other subject, to say nothing about those who are not familiar with the education of the deaf, who do not realize the enormous proportions of the work and expenditures along this line during the century which stands out in such bold relief.

The American Annals of the Deaf, beginning with January, 1875, has published annually a table of statistics of the State schools showing, among other things, the number of pupils attending, the number of instructors employed, and the amounts expended for support and for buildings and grounds. These statistics show that for the years 1875 to 1910, inclusive, there were supported 347,881 pupils and that there were employed 32,489 instructors, counting, of course, in many instances the same children and employees year after year; and there was expended for support $62,189,380.57, and on buildings and grounds $12,411,105.65, making an annual average total of $2,131,440.23. The total value of the buildings and grounds of the 62 State schools January 1, 1911, was $15,649,104, or an average value of $252,403.

Would that a Fay had appeared in 1817 to tabulate and publish and perpetuate such statistics that we might see what a century of work revealed!

For what does the education of the deaf in this country stand?

Looked at from a commercial point of view, it must be a most successful enterprise when the legislative bodies of our sovereign States continue to make such enormous appropriations to cover expense accounts.

Looked at from an industrial point of view, it takes in the whole range of occupations and is opening the way for them to enter every calling.

Looked at from the point of citizenship, statistics show that the educated deaf are not only not dependent, but are earning annually a sum equal to, if not greater than, the total amounts expended by the States in the care and training of those placed in the schools year by year.

Looked at from an intellectual or literary point of view, does not the founding and maintaining and operating of this very college crown it with the supremest success?

I may tell you that I am stirred by the profoundest emotions; I may point you to men of unusual power who have immolated themselves upon the altar of service for the deaf; I may gather statistics and show what marvelous strides have been made and what the country has done for the deaf; I may remind you what signal success has crowned the efforts of the educated deaf themselves; I might marshal before you that great galaxy of faithful, competent, patient, loving, Christian teachers who have gone to their rewards; but unless I hold aloft the name of Gallaudet and trace its magic power through the century and tell you that there is the inspiration for those who have gone and those who are passing and those who are coming, I would not satisfy my constituency. Every hair of every head of every pupil and of every graduate of every school for the deaf of every State of the Union points to the name of Gallaudet. That name is written in the palms of their hands and dangles from their very finger tips.

Time in his untiring march may some day take from us the last Gallaudet, but the name will forever run as a golden thread through the weaving of the history of the people they loved so well.

Dr. Gallaudet, I greet you to-day in the name of 13,540 pupils and 1,673 instructors and thousands upon thousands of their friends scattered over this great country.

Mississippi's gifted orator, fearless Congressman, distinguished Senator, successful Secretary, able Justice, and renowned statesman, L. Q. C. Lamar, said at the open grave of Charles Sumner, "If we knew each other better we would love each other more." We could not know you any better, therefore we can not love you any more. We know the trials you have had, the stands you have taken, the battles you have fought, the sieges you have endured, the scars you have received, the victories you have won. We have analyzed your blood, blood which came by right of inheritance, and found in it wisdom, justice, iron love.

You have come to the close of a long, successful, and illustrious career as the founder and head of a celebrated college. Your personality supports its foundations, cements its walls, decorates its ceilings, sparkles in its curriculum, and embellishes its name. In all my dreams of fancy I had never pictured so much honor for myself as I enjoy now, for I am commissioned by your hundreds of thousands of friends in this great country to place upon your brow the crown that glory wears.

And now, my young friend, Mr. President, there is the past. It reveals a glorious and an inspiring record. Study it and you will find an ideal and catch a glimpse of a goal. Are you afraid? If you have said to God, "When I consider Thy heavens, the work of Thy fingers, the moon and the stars which Thou hast ordained, what am I?" remember He said, "Let us make man in our image, after our likeness." Measured by the universe you are helpless. Measured by the standard by which you were made, your possibilities are infinite. "Be not afraid, neither be thou dismayed." "Only be thou strong and very courageous, for the Lord thy God is with thee whithersoever thou goest."

### Address of Dr. Edward Gallaudet.

Gentlemen, students, and friends: When Mr. Hall graduated from Harvard University he came to Kendall Green and entered the normal department. He devoted himself earnestly for a year to the questions of the best methods of educating the deaf. He had determined to devote his life to that work. He was then called to the New York institution to be an instructor, and was successful in his work. After two years he was called to the faculty of our college, in which he has since labored with immense success, and during this period he has been in charge of the normal department and of the department of articulation. In these departments he has shown executive ability of the highest order, which makes me confident of his success in the field to which he has now been called.

Allusion has been made in some of the addresses to-day of tho close connection between this institution and the Congress of the United States. As I look over the many years I have been here I feel a deep sense of gratitude that Congress has so nobly aided the work here, which shows for itself what has been accomplished, and I feel that the result of that work in benefit to the young people can hardly be overestimated, for it has opened to them the higher grades of employment which would have been impossible without the education received here. They have been through a task of difficulty in the enlargement of their mental scope, and all that has been given to them in their studies in literature and the arts and sciences has not been given in vain. I have no hesitation in saying that I feel sure that all the money which has been spent by Congress here in this institution has been repaid by the students in enabling them to enter the world well equipped to be self supporting.

In retiring from the activity of president I go with a feeling that we have never asked a dollar which was not deserved and which was not useful and beneficial.

To President Hall I desire to convey my warmest congratulations. As I place in his hands the wand I believe he will have the unselfish support of his colleagues of the institutions, of our graduates, of the deaf of the country, and of all who are interested in the education of the deaf. I wish him Godspeed in his success and in all he undertakes.

## Address of President Hall.

President Gallaudet and gentlemen of the board of directors: I appreciate highly the confidence you have shown me and the honor you have done me in placing in my hands the guidance of this noble institution. In accepting this great responsibility, President Gallaudet, I most earnestly pray for a double portion of your spirit; that spirit which has secured for you the love and devotion of all connected with this institution; that spirit which has guided it safely through calm and storm for over half a century.

Ladies and gentlemen: Up to the present time there have been five important steps in the education of the deaf. The first was the comprehension of the fact that deafness is only a physical defect which bars no one from mental advancement, the realization that the eye can open to the mind through language—printed, spoken, spelled, or signed—nearly the whole field of knowledge. This idea was established by Cardan in Italy less than 400 years ago.

The second step was the actual instruction of the deaf and the recording of the means used in doing so. This was accomplished nearly a century later in Spain by De Leon and Bonet, and several deaf children were taught to speak orally, to spell manually, and to write their native language.

The third step was the recognition of the duty of the State to educate its deaf children. This was brought about near the end of the eighteenth century by the work of the noble Abbé de l'Épée for poor deaf children in Paris, though an Austrian disciple of his founded a national school in Vienna before the French Government took over the school in its own capital.

The fourth step was the introduction into the United States in 1817, by Thomas Hopkins Gallaudet, of the education of the deaf as a State duty. In our young, rich, and progressive nation this special work has ever since been recognized as one of the duties and privileges of the Government, and has been more highly developed and more successfully carried on than anywhere else in the world.

In 1864 came the last important step, brought about by Edward Miner Gallaudet, the foundation of this college for the deaf, a college whose graduates have proved by their splendid work in the fields of business, science, art, education, and letters, the wisdom of its founder, the wisdom of Congress, its liberal supporter, and the wisdom of Cardan when he proclaimed to the world 400 years ago the possibility of the mastery of knowledge by the eye unaided by the ear.

It is most worthy of remembrance that two of these great steps have been due to the labors of Americans. It is doubly remarkable that they have been due to the labors of father and son; and as long as there are deaf people in the world, or any history of the education of the deaf exists—yes, as long as there shall be admiration for noble work of any kind—so long will the name of Gallaudet be held in honor and in love.

The pioneer work, the difficult work, the greatest work in our field has already been accomplished. Yet I believe there is much still to be done in which this college may bear an honorable part.

With the beautiful domain of Kendall Green, its farm and field and forest, ready for use, we should broaden our work here by giving to our young men more opportunities to study the science of agriculture. With shops, power and light plant and laboratories well equipped we must open to them more and more the fields of chemistry and electricity with their practical applications. With better equipment for both theory and practice we should offer to our young women the opportunity of learning better home making; all of these opportunities for careful study by scientific methods, so our students may be inspired in their work by the love of truth. Yet in thus expanding Gallaudet College must always stand for a thorough and strong foundation in language, in mathematics, in history, in philosophy, without which any superstructure must surely fall.

And above all, to the deaf people of all the world, in fact to all the world Gallaudet College to be worthy of its name must continue ever to stand for high ideals of character and for faith in God, such ideals and such faith as carried one Gallaudet across wide oceans in the search for light, and has borne another through 54 years of constant and successful labor for the advancement of the deaf.

### Address of Hon. John W. Foster.

President Gallaudet: I may still address you as president. I desire to speak a last word to you in behalf of the board of directors of this institution.

Four years ago when you completed your half century of labor in this college the board of directors adopted a series of resolutions expressive of their appreciation of your services during this long period. These resolutions were made as a part of the commencement exercises at that time, were engraved, framed, and delivered to you. The four years that have passed have only intensified our appreciation of your services, and it is not necessary, therefore, that I should lengthen my remarks by a repetition of this appreciation.

I have been requested by the board to ask you to accept this product of the craftsman's art, to be kept by you in remembrance of us and our association with you, and which may be handed down as an heirloom to your children. The inscription placed upon it indicates our purpose in its presentation, and reads as follows:

"To Edward Miner Gallaudet, President of the Columbia Institution for the Deaf for fifty-four years. From the Directors of that Institution, as a token of their esteem and appreciation for him as a teacher, philanthropist, and man. Washington, D. C. May, 1911."

It will be to you not only a token of our esteem and high estimate of your labors, but also a reminder that as the result of your long and faithful services you have established here the only institution of higher or university education for the deaf, not only in the United States, but in the whole world.

# REPORT OF THE FREEDMEN'S HOSPITAL.

## ROSTER OF OFFICERS.

### STAFF.

W. A. Warfield, M. D., *Surgeon in Chief.*
S. L. Carson, M. D., *Assistant Surgeon.*
C. A. Brooks, M. D., *Resident Physician.*
Walter Van Swearingen, M. D., *Pathologist.*
Geo. W. Davis, M. D., *Anæsthetist.*

### NURSES.

Laura R. MacHale, superintendent; Emma M. Irwin, assistant superintendent; Martha E. Cabaniss, night supervisor; Marion V. Lucas, head nurse; Bertha J. Thomas, head nurse.

### CLERK AND ASSISTANTS.

H. H. Cardozo, Arsine E. Jones (stenographer), W. E. Cobb.

### INTERNES.

Wm. A. Barrett, M. D.
Clarence Brent, M. D.
M. O. Bousfield, M. D.
C. S. Davis, M. D.
Wm. Harper, M. D.
R. A. Johnson, M. D.
G. S. Moore, M. D.
Wm. M. Thorne, M. D.
Wm. E. Davis, B. Sc., *Pharmacist.*
Walter S. Rohoblt, *Assistant Pharmacist.*

### ADVISORY VISITING STAFF.

Edward A. Balloch, M. D.
Edward D. Williston, M. D
John R. Francis, M. D.
Wm. F. Sowers, M. D.
Wm. L. Robins, M. D.
Jas. J. Richardson, M. D.
J. B. Nichols, M. D.

### VISITING STAFF.

#### INDOOR.

#### *Medical.*

Henry P. Parker, M. D.
Caryl Burbank, M. D.
Thomas Martin, M. D.
Robert W. Brown, M. D.
J. B. Nichols, M. D.
E. H. Reede, M. D.
Lewis Ecker, M. D.

#### *Surgical.*

E. A. Balloch, M. D.
Wm. F. Sowers, M. D
Wm. A. Jack, M. D.
H. H. Kerr, M. D.
A. M. Curtis, M. D.

#### *Gynecological.*

W. A. Warfield, M. D.
Wm. C. McNeill, M. D.
Howard Hume, M. D.
J. E. H. Taylor, M. D.
H. W. Lawson, M. D.

#### *Obstetrical*

John R. Francis, M. D.
Geo. N. Perry, M. D.
Edward D. Williston, M. D.

#### *Ophthalmology.*

Robert S. Lamb, M. D. Assistants: Martha B. Lyon, M. D.; Elizabeth Sohon, M. D.

### *Otology and Rhinology.*

J. J. Richardson, M. D. Assistants: Reginald R. Walker, M. D.; Hamilton S. Martin, M. D.

### *Neurology.*

Wm. L. Robins, M. D. Assistant: Joseph C. Tappan, M. D.

### *Genito-Urinary.*

H. A. Fowler, M. D. Assistant: Milton A. Francis, M. D.

### *Orthopedics.*

Wm. G. Erving, M. D. Assistant: Karl C. Corley, M. D.

### *Pediatrics.*

John W. Mitchell, M. D.
Wm. J. French, M. D.
Noble P. Barnes, M. D.
Milton Hahn, M. D.

## OUTDOOR.

### *Medical.*

E. H. Reede, M. D.
U. J. Daniels, M. D.
R. A. Logan, M. D.
C. A. Tignor, M. D.
S. S. Thompson, M. D.
Edward P. Larkin, M. D.
C. N. Chipman, M. D.
Wm. W. M. Henry, M. D.

### *Minor surgery*

Wm. A. Jack, M. D.
C. W. Childs, M. D.
S. L. Carson, M. D.
Wm. J. Howard, M. D.

### *Ophthalmology.*

R. S. Lamb, M. D. Assistants: Martha B. Lyon, M. D.; James C. Dowling, M. D.; Elizabeth Sohon, M. D.; E. C. A. Wilson, M. D.

### *Otology and rhinology.*

J. J. Richardson, M. D. Assistants: Reginald Walker, M. D.; Hamilton S. Martin, M. D.; Guy S. Saffold, M. D.

### *Neurology.*

Wm. L. Robins, M. D Assistant: Jos. C. Tappan, M. D.

### *Genito-Urinary.*

H. A. Fowler, M. D. Assistants: Milton A. Francis, M. D.; Frank J. Spellman, M. D.

### *Gynecology.*

Wm. C. McNeill, M. D. Assistant: Chas. H. Marshall, M. D.

### *Pediatrics.*

Noble P. Barnes, M. D. J. W. Mitchell.
Assistants: C. B. Conklin, M. D.; William Hart, M. D.; W. F. R. Phillips, M. D.; Louise Tayler Jones, M. D.; Francis J. Johnson, M. D.

### *Dermatology.*

H. H. Hazen.

### *Tuberculosis.*

Paul B. Johnson, M. D.

# REPORT OF THE FREEDMEN'S HOSPITAL.

## INTRODUCTION.

WASHINGTON, D. C., *August 11, 1911.*

SIR: I have the honor to submit for your consideration the annual report of the Freedmen's Hospital for the fiscal year ended June 30, 1911.

The volume of work covered by this report is greater in every way than that of the preceding year, severely taxing the efforts of the hospital force to cope with the same.

Much has been done to improve the condition of the hospital generally, thereby adding to the care and comfort of the patients. The new wing, authorized by the sundry civil act of March 4, 1909, was completed and occupied during the year, providing 50 additional beds. The remodeling of the central power plant and construction of an electric-light plant were also completed and are in operation. Some idea of the amount and character of medical and surgical work done is set forth in detail in the statistical part of this report.

## PATIENTS.

Patients admitted to the hospital are classed under two heads—United States and District of Columbia. Those from the District of Columbia are received under a contract with the Board of Charities at the following rates: Adults, $1.10; children, $0.65; and babies, $0.40 per day.

At the close of the preceding year there remained 154 patients—87 from the District of Columbia and 67 from the States. Two thousand four hundred and ninety-eight were received during the year, and 248 births occurred in the hospital, making a total of 2,900 indoor patients treated, as against 2,869 the previous year. Of those under care, 1,882 were residents of the District of Columbia and 1,018 were from the States. Two thousand seven hundred and twenty-four were discharged during the year, their conditions being as follows: Recovered, 1,416; improved, 919; unimproved, 138; not treated, 17; died, 234; leaving 176 in the hospital July 1, 1911, of which number 100 were from the District and 76 from the States.

The mortality for the year from all causes was 8+ per cent. Deducting the 13 premature births and the 57 moribund cases, the percentage of deaths is found to be 5.6+—a very low death rate for a hospital of this character.

In the surgical division 1,767 operations were performed, or 285 more than during the previous year.

## OUTDOOR DEPARTMENT.

In this department 4,839 were treated—an increase of 292 over last year—as follows.

Medical, 1,258; surgical, 351; nervous, 192; eye, 554; ear, nose, and throat, 437; pediatrics, 344; gynecology, 482; dermatology, 314; genito-urinary, 778; tubercular, 91; orthopedic, 38. The number of visits to this department was 5,637. Twelve thousand seven hundred and twelve prescriptions were compounded and 983 emergency cases were received.

*Medical and surgical diseases.*

| Disease. | Remaining July 1, 1910. | Admitted. | | | | | Discharged. | | | | | | Total number of days in hospital. | Average number of days in hospital. | Remaining July 1, 1911. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | White. | | Colored. | | | | | | | | | | | |
| | | Male. | Female. | Male. | Female. | Total. | Recovered. | Improved. | Unimproved. | Not treated. | Died. | Total. | | | |
| ***Abscesses, infections, and ulcers.*** | | | | | | | | | | | | | | | |
| Abscess: | | | | | | | | | | | | | | | |
| Abdominal wall | .... | .... | .... | 2 | .... | 2 | 1 | 1 | .... | .... | .... | 2 | 29 | 14.5 | .... |
| Aveola | .... | .... | .... | 2 | 1 | 3 | 1 | 2 | .... | .... | .... | 3 | 21 | 7.33 | .... |
| Appendicial | 1 | .... | .... | .... | 1 | 2 | 1 | 1 | .... | .... | .... | 2 | 31 | 15.5 | .... |
| Bursa of stump | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 11 | 11.0 | .... |
| Buttock | .... | .... | .... | .... | 1 | 1 | .... | 1 | .... | .... | .... | 1 | 23 | 23.0 | .... |
| Back, tubercular | .... | .... | 1 | .... | 1 | 2 | 1 | .... | 1 | .... | .... | 2 | 16 | 8.0 | .... |
| Epidural | .... | .... | .... | .... | 1 | 1 | 1 | .... | .... | .... | .... | 1 | 15 | 15.0 | .... |
| Eyelid | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 1 | 1.0 | .... |
| Frontal sinus | .... | .... | .... | 1 | 1 | 2 | .... | 1 | .... | .... | .... | 1 | 7 | 7.0 | 1 |
| Ischio-rectal | 2 | .... | .... | 3 | 4 | 9 | 2 | 4 | .... | .... | 2 | 8 | 272 | 34.0 | 1 |
| Neck | .... | .... | .... | .... | 1 | 1 | .... | 1 | .... | .... | .... | 1 | 7 | 7.0 | .... |
| Parotid gland | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 4 | 4.0 | .... |
| Perinephritic | .... | .... | .... | 2 | .... | 2 | 2 | .... | .... | .... | .... | 2 | 91 | 45.5 | .... |
| Perineum | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 17 | 17.0 | .... |
| Peritonsillar | .... | .... | .... | 2 | 2 | 4 | 1 | 3 | .... | .... | .... | 4 | 20 | 5.0 | .... |
| Periurethral | .... | .... | .... | 3 | .... | 3 | 2 | 1 | .... | .... | .... | 3 | 66 | 22.0 | .... |
| Psoas | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 25 | 25.0 | .... |
| Retropharyngeal | .... | .... | .... | .... | 2 | 2 | 1 | 1 | .... | .... | .... | 2 | 6 | 3.0 | .... |
| Tunica vaginalis | .... | .... | .... | 1 | .... | 1 | 1 | .... | .... | .... | .... | 1 | 31 | 31.0 | .... |
| Vulva | .... | .... | .... | .... | 2 | 2 | .... | 2 | .... | .... | .... | 2 | 34 | 17.0 | .... |
| Infections: | | | | | | | | | | | | | | | |
| Finger | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 48 | 48.0 | .... |
| Foot | .... | .... | .... | 1 | 1 | 2 | .... | 2 | .... | .... | .... | 2 | 59 | 29.5 | .... |
| Hand | 1 | .... | .... | 3 | 1 | 5 | 2 | 3 | .... | .... | .... | 5 | 132 | 26.4 | .... |
| Lachrymal sac | .... | .... | .... | .... | 1 | 1 | 1 | .... | .... | .... | .... | 1 | 14 | 14.0 | .... |
| Leg | .... | .... | .... | 2 | 1 | 3 | 1 | 2 | .... | .... | .... | 3 | 209 | 69.6 | .... |
| Neck | .... | 1 | .... | 1 | .... | 2 | 1 | 1 | .... | .... | .... | 2 | 13 | 6.5 | .... |
| Thumb | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 1 | 1.0 | .... |
| Toe | .... | .... | .... | 2 | .... | 2 | 1 | 1 | .... | .... | .... | 2 | 43 | 21.5 | .... |
| Ulcers: | | | | | | | | | | | | | | | |
| Foot | .... | .... | .... | .... | 1 | 1 | .... | 1 | .... | .... | .... | 1 | 65 | 65.0 | .... |
| Leg: | | | | | | | | | | | | | | | |
| Syphilitic | .... | .... | .... | 1 | 3 | 4 | 3 | .... | .... | .... | .... | 3 | 155 | 51.6 | 1 |
| Varicose | 2 | .... | .... | 6 | 8 | 16 | 4 | 8 | .... | .... | 1 | 13 | 530 | 40.7 | 3 |
| Rectum | .... | .... | .... | .... | 1 | 1 | .... | 1 | .... | .... | .... | 1 | 33 | 33.0 | .... |
| Thigh | .... | .... | .... | .... | 1 | 1 | .... | 1 | .... | .... | .... | 1 | 16 | 16.0 | .... |
| Toe (trophic) | .... | .... | .... | 1 | 1 | 2 | 1 | 1 | .... | .... | .... | 2 | 71 | 35.5 | .... |
| ***Bones and joints.*** | | | | | | | | | | | | | | | |
| Amputated fingers | .... | .... | .... | 2 | 1 | 3 | 2 | 1 | .... | .... | .... | 3 | 55 | 18.3 | .... |
| Ankylosis: | | | | | | | | | | | | | | | |
| Elbow | .... | .... | .... | .... | 1 | 1 | .... | 1 | .... | .... | .... | 1 | 16 | 16.0 | .... |
| Knee | 1 | .... | .... | 1 | 3 | 5 | 1 | 2 | 1 | .... | .... | 4 | 307 | 77.0 | 1 |
| Arthritis: | | | | | | | | | | | | | | | |
| Deformans | .... | .... | .... | .... | 1 | 1 | .... | 1 | .... | .... | .... | 1 | 25 | 25.0 | .... |
| Gonorrheal | 3 | 1 | .... | 15 | 7 | 26 | 4 | 19 | 1 | .... | .... | 24 | 944 | 39.3 | 2 |
| Hypertrophic | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 40 | 40.0 | .... |
| Rheumatoid | .... | .... | .... | 1 | 1 | 2 | .... | 2 | .... | .... | .... | 2 | 106 | 53.0 | .... |
| Traumatic | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 3 | 3.0 | .... |
| Tubercular: | | | | | | | | | | | | | | | |
| Ankle | 1 | .... | .... | 1 | .... | 2 | .... | 1 | .... | .... | .... | 1 | 263 | 263.0 | 1 |
| Elbow | .... | 1 | .... | .... | 1 | 2 | .... | .... | .... | .... | .... | .... | .... | .... | 2 |
| Hip joint | .... | .... | .... | 8 | 2 | 10 | 1 | 6 | .... | .... | 1 | 8 | 420 | 52.5 | 2 |
| Knee | 2 | .... | .... | 3 | 3 | 8 | 1 | 5 | .... | .... | .... | 6 | 942 | 157.0 | 2 |
| Spine | 3 | .... | .... | 2 | 1 | 6 | 1 | 4 | .... | .... | .... | 5 | 564 | 112.8 | 1 |

*Medical and surgical diseases*—Continued.

| Disease. | Remaining July 1, 1910. | Admitted. | | | | | Discharged. | | | | | | Total number of days in hospital. | Average number of days in hospital. | Remaining July 1, 1911. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | White. | | Colored. | | Total. | Recovered. | Improved. | Unimproved. | Not treated. | Died. | Total. | | | |
| | | Male. | Female. | Male. | Female. | | | | | | | | | | |
| *Abscesses, infections, and ulcers*—Con. | | | | | | | | | | | | | | | |
| Bunion | | | | | 1 | 1 | 1 | | | | | 1 | 38 | 38.0 | |
| Bone cyst humerus | | | | 1 | | 1 | 1 | | | | | 1 | 32 | 32.0 | |
| Deformities: | | | | | | | | | | | | | | | |
| Contracted arm | | | | | 1 | 1 | | 1 | | | | 1 | 22 | 22.0 | |
| Genu valgum | | | | 4 | 1 | 5 | 1 | 1 | | 1 | | 3 | 85 | 28.3 | 2 |
| Pes planus | | | | 1 | | 1 | | 1 | | | | 1 | 10 | 10.0 | |
| Scoliosis | | | | | 2 | 2 | | 2 | | | | 2 | 58 | 29.0 | |
| Dislocations: | | | | | | | | | | | | | | | |
| Cervical vertebræ | | | | 1 | | 1 | | | | | 1 | 1 | 9 | 9.0 | |
| Elbow | | | | 1 | | 1 | | 1 | | | | 1 | 2 | 2.0 | |
| Femur | | | | | 1 | 1 | | 1 | | | | 1 | 51 | 51.0 | |
| Semilunar cartilage | | | | 1 | | 1 | 1 | | | | | 1 | 13 | 13.0 | |
| Humerus | | | | 6 | | 6 | 2 | 4 | | | | 6 | 23 | 4.0 | |
| Tarsal bones | | | | 1 | | 1 | | 1 | | | | 1 | 39 | 39.0 | |
| Ulna | | | | 2 | | 2 | | 2 | | | | 2 | 4 | 2.0 | |
| Fallen arches | | | | 3 | | 3 | 1 | 2 | | | | 3 | 196 | 65.3 | |
| Fractures: | | | | | | | | | | | | | | | |
| Acromion process | | | | 1 | | 1 | | 1 | | | | 1 | 7 | 7.0 | |
| Clavicle | | 1 | | 2 | | 3 | | 3 | | | | 3 | 33 | 11.0 | |
| Femur | | 1 | | 1 | | 2 | | 2 | | | | 2 | 120 | 60.0 | |
| Fibula | | | | 2 | | 2 | 1 | 1 | | | | 2 | 43 | 21.5 | |
| Humerus | | | | 4 | 1 | 5 | | 5 | | | | 5 | 74 | 15.0 | |
| Inferior maxilla | 1 | | | 2 | | 3 | 1 | 2 | | | | 3 | 51 | 17.0 | |
| Olecranon process | | | | 1 | | 1 | 1 | | | | | 1 | 28 | 28.0 | |
| Patella | | | | 1 | | 1 | | 1 | | | | 1 | 38 | 38.0 | |
| Radius | | | | 3 | 3 | 6 | 1 | 5 | | | | 6 | 144 | 24.0 | |
| Rib | | 1 | | 1 | 2 | 4 | 1 | 3 | | | | 4 | 40 | 10.0 | |
| Skull | 1 | 1 | | 6 | | 8 | 3 | 4 | | | 1 | 8 | 60 | 7.5 | |
| Superior maxilla | | | | 1 | | 1 | | 1 | | | | 1 | 10 | 10.0 | |
| Tibia | | 1 | | 9 | | 10 | 4 | 5 | 1 | | | 10 | 144 | 14.4 | |
| Vertebra | | | | 2 | | 2 | | 1 | | | 1 | 2 | 203 | 101.5 | |
| Lacerated ligaments: | | | | | | | | | | | | | | | |
| Ankle | | | | 2 | | 2 | | 2 | | | | 2 | 26 | 13.0 | |
| Knee | 1 | | | | 1 | 2 | 1 | 1 | | | | 2 | 43 | 21.5 | |
| Osteomyelitis: | | | | | | | | | | | | | | | |
| External malleolus | | | | 1 | | 1 | | 1 | | | | 1 | 37 | 37.0 | |
| Femur | | | | | 1 | 1 | | 1 | | | | 1 | 96 | 96.0 | |
| Ilium | | | | 1 | | 1 | | 1 | | | | 1 | 33 | 33.0 | |
| Oscalcis | 1 | | | | | 1 | | 1 | | | | 1 | 159 | 159.0 | |
| Tibia | | | | 8 | | 8 | | 5 | 1 | | 1 | 7 | 320 | 45.7 | 1 |
| Toe | | | | 1 | | 1 | | | | | | | | | 1 |
| Sprain: | | | | | | | | | | | | | | | |
| Ankle | | | | 6 | 1 | 7 | 1 | 4 | | 1 | | 6 | 53 | 9.0 | 1 |
| Back | | | | 3 | | 3 | 2 | 1 | | | | 3 | 27 | 9.0 | |
| Hip | | | | | 1 | 1 | | 1 | | | | 1 | 2 | 2.0 | |
| Knee | | | | 1 | 1 | 2 | 2 | | | | | 2 | 12 | 6.0 | |
| Sacro-iliac | | | | 1 | 2 | 3 | | 2 | 1 | | | 3 | 23 | 7.66 | |
| Shoulder | | | | 1 | | 1 | | 1 | | | | 1 | 21 | 21.0 | |
| Subcutaneous fat about knee | | | | 1 | | 1 | 1 | | | | | 1 | 44 | 44.0 | |
| Synovitis: | | | | | | | | | | | | | | | |
| Ankle | 1 | | | | | 1 | | 1 | | | | 1 | 56 | 56.0 | |
| Elbow | | | | 1 | | 1 | | 1 | | | | 1 | 3 | 3.0 | |
| Hand | 1 | | | | | 1 | | 1 | | | | 1 | 27 | 27.0 | |
| Knee | | | | 2 | 1 | 3 | 2 | 1 | | | | 3 | 44 | 14.7 | |
| Ununited fracture | | | | 2 | | 2 | 2 | | | | | 2 | 54 | 27.0 | |
| *Circulatory system.* | | | | | | | | | | | | | | | |
| Acute dilatation, heart | | | | 2 | | 2 | | 2 | | | | 2 | 35 | 17.5 | |
| Acute endocarditis | | | | 1 | 1 | 2 | | 1 | | | 1 | 2 | 77 | 38.5 | |
| Aneurysm: | | | | | | | | | | | | | | | |
| Abdominal aorta | | | | | 1 | 1 | | 1 | | | | 1 | 100 | 100.0 | |
| Arch aorta | | | | 2 | | 2 | | 2 | | | | 2 | 132 | 66.0 | |
| Arterio-sclerosis | 1 | 2 | | 8 | 1 | 12 | | 8 | 2 | | 1 | 11 | 209 | 19.0 | 1 |
| Frostbite, feet | | | | | 1 | 1 | | | | | | | | | 1 |
| Gangrene: | | | | | | | | | | | | | | | |
| Foot | | | | 5 | 3 | 8 | 4 | 1 | 1 | | 2 | 8 | 534 | 66.7 | |
| Hemorrhoids: | | | | | | | | | | | | | | | |
| External | | | | 1 | 3 | 4 | 4 | | | | | 4 | 35 | 9.0 | |
| Internal | | | | 4 | 3 | 7 | 7 | | | | | 7 | 99 | 14.1 | |

*Medical and surgical diseases*—Continued.

| Disease. | Remaining July 1, 1910. | Admitted. | | | | | Discharged. | | | | | | Total number of days in hospital. | Average number of days in hospital | Remaining July 1, 1911. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | White. | | Colored. | | | | | | | | | | | |
| | | Male. | Female. | Male. | Female. | Total. | Recovered. | Improved. | Unimproved. | Not treated. | Died. | Total. | | | |
| *Circulatory system*—Continued. | | | | | | | | | | | | | | | |
| Myocarditis | | | | 2 | 1 | 3 | | 1 | 1 | | 1 | 3 | 185 | 62.6 | |
| Pericarditis | 1 | | | 2 | 1 | 4 | 1 | 1 | | | 1 | 3 | 18 | 6.0 | 1 |
| Post operative hemorrhage | | | | 2 | 3 | 5 | 2 | 3 | | | | 5 | 8 | 1.6 | |
| Pyemia | | | | | 1 | 1 | | | | | 1 | 1 | 2 | 2.0 | |
| Insufficiency: | | | | | | | | | | | | | | | |
| Aortic | | | | 3 | 2 | 5 | | 3 | | | 1 | 4 | 58 | 14.5 | 1 |
| Mitral | 5 | | 1 | 21 | 12 | 39 | 1 | 26 | 1 | | 10 | 38 | 1,196 | 31.5 | 1 |
| Stenosis: | | | | | | | | | | | | | | | |
| Aortic | | | | 1 | 3 | 4 | | 3 | | | | 3 | 65 | 21.6 | 1 |
| Mitral | 1 | | | | 2 | 3 | | 3 | | | | 3 | 284 | 94.6 | |
| Tachycardia | | | | | 1 | 1 | | | | | | | | | 1 |
| Thrombo-phlebitis | 1 | | | 3 | 3 | 7 | 3 | 2 | | | | 5 | 87 | 17.4 | 2 |
| Varicose veins, leg | | 1 | | 3 | 6 | 10 | 4 | 6 | | | | 10 | 331 | 33.1 | |
| *Constitutional diseases.* | | | | | | | | | | | | | | | |
| Anæmia: | | | | | | | | | | | | | | | |
| Pernicious | 1 | | | | | 1 | | 1 | | | | 1 | 56 | 56.0 | |
| Secondary | | | | 1 | 3 | 4 | | 4 | | | | 4 | 80 | 20.0 | |
| Diabetes mellitus | | | | 1 | 2 | 3 | | 1 | | | 1 | 2 | 52 | 26.0 | 1 |
| Marasmus | 1 | | | 17 | 8 | 26 | 3 | 3 | | | 20 | 26 | 209 | 8.0 | |
| Purpura | | | | | 1 | 1 | 1 | | | | | 1 | 35 | 35.0 | |
| Rickets | | | | 1 | 1 | 2 | | 1 | | | 1 | 2 | 170 | 85.0 | |
| Senile debility | 2 | | | 5 | 2 | 9 | | 4 | 1 | | 3 | 8 | 140 | 17.5 | 1 |
| *Digestive tract.* | | | | | | | | | | | | | | | |
| Appendicitis: | | | | | | | | | | | | | | | |
| Acute | 1 | | | 12 | 5 | 18 | 10 | 3 | 1 | | 3 | 17 | 499 | 29.3 | 1 |
| Chronic | | | | 3 | 2 | 5 | 4 | | | | 1 | 5 | 99 | 19.8 | |
| Constipation | | | | 7 | 2 | 9 | 8 | 1 | | | | 9 | 71 | 8.0 | |
| Diarrhea | | | | 1 | | 1 | 1 | | | | | 1 | 2 | 2.0 | |
| Duodenal ulcer | | | | 2 | | 2 | | 1 | 1 | | | 2 | 16 | 8.0 | |
| Enteritis | 2 | | | 12 | 20 | 34 | 11 | 12 | 1 | | 8 | 32 | 518 | 16.2 | 2 |
| Enteroptosis | | | | | 3 | 3 | 3 | | | | | 3 | 76 | 25.3 | |
| Fecal impaction | | | | | 1 | 1 | | | | | | | | | 1 |
| Fissure in ano | | | | 4 | 4 | 8 | 6 | 2 | | | | 8 | 131 | 16.3 | |
| Fistula in ano | 2 | | | 14 | 9 | 25 | 14 | 10 | | | | 24 | 501 | 20.9 | 1 |
| Hernia: | | | | | | | | | | | | | | | |
| Direct inguinal | | 1 | | 2 | | 3 | 3 | | | | | 3 | 113 | 37.6 | |
| Indirect inguinal | 2 | 1 | | 24 | 4 | 31 | 24 | | 2 | 1 | 1 | 28 | 628 | 22.4 | 3 |
| Strangulated femoral | | | | | 1 | 1 | | | | | 1 | 1 | 1 | 1.0 | |
| Strangulated inguinal | | | | 3 | | 3 | 1 | | | | 1 | 2 | 33 | 16.5 | 1 |
| Umbilical | 1 | | | 2 | 1 | 4 | 2 | 2 | | | | 4 | 82 | 20.5 | |
| Ventral | | | | 2 | 2 | 4 | 2 | | | | | 2 | 78 | 39.0 | 2 |
| Hernia and epididymitis | | | | 1 | | 1 | 1 | | | | | 1 | 43 | 43.0 | |
| Hernia and femoral adenitis | | | | 1 | | 1 | | 1 | | | | 1 | 29 | 29.0 | |
| Hernia and hydrocele | 1 | | | 1 | | 2 | 1 | 1 | | | | 2 | 71 | 35.5 | |
| Hernia and variocele | | | | 1 | | 1 | 1 | | | | | 1 | 15 | 15.0 | |
| Imperforate anus | | | 1 | | | 1 | | | 1 | | | 1 | 1 | 1.0 | |
| Intestinal obstruction | | 1 | | 5 | 5 | 11 | | 1 | | | 10 | 11 | 79 | 7.2 | |
| Mouth: | | | | | | | | | | | | | | | |
| Stomatitis | | | | 3 | | 3 | | 2 | 1 | | | 3 | 41 | 13.6 | |
| Oesophageal stricture | | | | 1 | | 1 | | | | | 1 | 1 | 1 | 1.0 | |
| Pancreatitis, acute | | | | | 1 | 1 | 1 | | | | | 1 | 137 | 137.0 | |
| Prolapse of rectum | | | | 1 | | 1 | 1 | | | | | 1 | 3 | 3.0 | |
| Liver: | | | | | | | | | | | | | | | |
| Abscess | | | | | 1 | 1 | | | | | 1 | 1 | 48 | 48.0 | |
| Cholelithiasis | 1 | | | | 1 | 2 | 2 | | | | | 2 | 69 | 34.5 | |
| Cirrhosis | 1 | | | 2 | 2 | 5 | | 4 | | | 1 | 5 | 96 | 19.2 | |
| Cholecystitis | | | | 3 | 9 | 12 | 4 | 3 | 1 | | 3 | 11 | 277 | 25.2 | 1 |
| Jaundice | | | | 1 | | 1 | | | | | | | | | 1 |
| Syphilitic gumma | 1 | | | | | 1 | | 1 | | | | 1 | 38 | 38.0 | |
| Recto-vaginal fistula | | | | | 1 | 1 | | | | | 1 | 1 | 69 | 69.0 | |
| Ruptured spleen | | | | 1 | | 1 | 1 | | | | | 1 | 22 | 22.0 | |
| Ruptured stomach | | | | | 1 | 1 | | | | | 1 | 1 | 1 | 1.0 | |

*Medical and surgical diseases*—Continued.

| Disease. | Remaining July 1, 1910. | Admitted. |  |  |  |  | Discharged. |  |  |  |  |  | Total number of days in hospital. | Average number of days in hospital. | Remaining July 1, 1911. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  | White. |  | Colored. |  |  |  |  |  |  |  |  |  |  |  |
|  |  | Male. | Female. | Male. | Female. | Total. | Recovered. | Improved. | Unimproved. | Not treated. | Died. | Total. |  |  |  |
| *Digestive tract*—Con. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Stomach: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Carcinoma | 1 | .... | .... | 2 | 3 | 6 | ...... | 2 | .... | .... | 3 | 5 | 95 | 19.0 | 1 |
| Gastritis— |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Acute | 2 | 2 | .... | 22 | 10 | 36 | 23 | 11 | .... | 1 | .... | 35 | 291 | 8.3 | 1 |
| Chronic | 1 | .... | .... | 2 | 6 | 9 | 1 | 8 | .... | .... | .... | 9 | 144 | 16.0 | .... |
| Ulcer | 1 | .... | .... | 1 | 2 | 4 | 2 | 1 | .... | .... | 1 | 4 | 98 | 24.5 | .... |
| Stricture, rectum | .... | .... | .... | 1 | 2 | 3 | ...... | 2 | .... | .... | .... | 2 | 46 | 23.0 | 1 |
| *Eye, ear, nose, and throat.* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Eye: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Corneal ulcer | .... | .... | .... | 4 | 1 | 5 | ...... | 5 | .... | .... | .... | 5 | 153 | 30.6 | .... |
| Conjunctivitis | .... | .... | .... | 2 | 1 | 3 | 1 | 1 | .... | .... | .... | 2 | 19 | 9.5 | 1 |
| Dachryocystitis | .... | .... | .... | ...... | 1 | 1 | ...... | 1 | .... | .... | .... | 1 | 10 | 10.0 | .... |
| Ectopion lid | .... | .... | .... | ...... | 3 | 3 | ...... | 3 | .... | .... | .... | 3 | 80 | 26.6 | .... |
| Entropion lid | .... | .... | .... | ...... | 1 | 1 | ...... | 1 | .... | .... | .... | 1 | 8 | 8.0 | .... |
| Fistula, lacrymal sac | .... | .... | .... | 1 | ...... | 1 | ...... | 1 | .... | .... | .... | 1 | 44 | 44.0 | .... |
| Glaucoma | 1 | .... | .... | ...... | ...... | 1 | ...... | 1 | .... | .... | .... | 1 | 66 | 66.0 | .... |
| Gonorrheal ophthalmia | .... | .... | .... | 1 | 1 | 2 | 1 | 1 | .... | .... | .... | 2 | 23 | 11.5 | .... |
| Iritis | .... | 1 | .... | 3 | 3 | 7 | 1 | 5 | .... | .... | .... | 6 | 172 | 28.7 | 1 |
| Kerato-iritis | .... | .... | .... | ...... | 1 | 1 | ...... | 1 | .... | .... | .... | 1 | 49 | 49.0 | .... |
| Neuroretinitis | .... | .... | .... | 2 | 1 | 3 | ...... | 3 | .... | .... | .... | 3 | 74 | 24.6 | .... |
| Optic atrophy | .... | .... | .... | 3 | ...... | 3 | ...... | 1 | 1 | 1 | .... | 3 | 60 | 20.0 | .... |
| Pan ophthalmitis | .... | .... | .... | 1 | ...... | 1 | ...... | 1 | .... | .... | .... | 1 | 11 | 11.0 | .... |
| Phlyctenular conjunctivitis | .... | .... | .... | 1 | 1 | 2 | ...... | 1 | .... | .... | .... | 1 | 21 | 21.0 | 1 |
| Phlyctenular keratitis | .... | .... | .... | 1 | ...... | 1 | ...... | .... | 1 | .... | .... | 1 | 33 | 33.0 | .... |
| Phthisis bulbi | .... | .... | .... | ...... | 1 | 1 | 1 | .... | .... | .... | .... | 1 | 48 | 48.0 | .... |
| Pterygium | .... | .... | .... | 1 | ...... | 1 | ...... | .... | .... | .... | .... | .... | .... | .... | 1 |
| Retention, cyst—lachrymal gland | .... | 1 | .... | ...... | ...... | 1 | ...... | 1 | .... | .... | .... | 1 | 1 | 1.0 | .... |
| Syphilitic keratitis | 1 | .... | .... | 7 | 2 | 10 | ...... | 8 | .... | .... | .... | 8 | 533 | 66.6 | 2 |
| Cataract— |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Senile | .... | .... | .... | 6 | 8 | 14 | 3 | 8 | .... | .... | .... | 11 | 461 | 42.0 | 3 |
| Congenital | .... | .... | .... | ...... | 1 | 1 | 1 | .... | .... | .... | .... | 1 | 97 | 97.0 | .... |
| Traumatic | 1 | .... | .... | 2 | 1 | 4 | 1 | 2 | .... | .... | .... | 3 | 207 | 69.0 | 1 |
| Ear: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Acute mastoiditis | .... | .... | .... | ...... | 1 | 1 | ...... | .... | .... | .... | 1 | 1 | 51 | 51.0 | .... |
| Impacted cerumen | .... | .... | .... | 1 | ...... | 1 | 1 | .... | .... | .... | .... | 1 | 2 | 2.0 | .... |
| Otitis media | .... | .... | .... | 2 | 2 | 4 | 3 | 1 | .... | .... | .... | 4 | 40 | 10.0 | .... |
| Nose: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Enlarged turbinates | .... | .... | .... | 2 | 1 | 3 | 2 | 1 | .... | .... | .... | 3 | 11 | 3.6 | .... |
| Epistaxis | .... | .... | .... | 1 | ...... | 1 | 1 | .... | .... | .... | .... | 1 | 17 | 17.0 | .... |
| Nasal polypi | .... | .... | .... | ...... | 2 | 2 | 2 | .... | .... | .... | .... | 2 | 10 | 5.0 | .... |
| Ozena | .... | .... | .... | 1 | ...... | 1 | ...... | 1 | .... | .... | .... | 1 | 14 | 14.0 | .... |
| Rhinitis: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Acute | .... | .... | .... | 1 | 1 | 2 | 1 | 1 | .... | .... | .... | 2 | 19 | 9.5 | .... |
| Chronic | .... | .... | .... | 1 | ...... | 1 | 1 | .... | .... | .... | .... | 1 | 2 | 2.0 | .... |
| Throat: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Acute pharyngitis | .... | .... | .... | ...... | 2 | 2 | 1 | 1 | .... | .... | .... | 2 | 19 | 9.5 | .... |
| Acute tonsillitis | .... | .... | .... | 6 | 3 | 9 | 7 | 2 | .... | .... | .... | 9 | 56 | 6.2 | .... |
| Adenoids | .... | .... | .... | ...... | 2 | 2 | 2 | .... | .... | .... | .... | 2 | 2 | 1.0 | .... |
| Angina ludovici | .... | .... | .... | ...... | 1 | 1 | ...... | 1 | .... | .... | .... | 1 | 11 | 11.0 | .... |
| Chronic tonsillitis | .... | .... | .... | 20 | 11 | 31 | 23 | 7 | .... | .... | .... | 30 | 115 | 3.8 | 1 |
| *Genito-urinary.* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Chancroids | 2 | 1 | .... | 15 | 4 | 22 | 3 | 13 | 2 | .... | 1 | 19 | 928 | 48.8 | 3 |
| Cystitis | .... | .... | .... | 7 | 4 | 11 | 5 | 4 | .... | .... | .... | 9 | 149 | 16.5 | 2 |
| Enuresis | .... | .... | .... | 1 | ...... | 1 | ...... | 1 | .... | .... | .... | 1 | 6 | 6.0 | .... |
| Epididymitis | 2 | 1 | ... | 12 | ...... | 15 | 4 | 11 | .... | .... | .... | 15 | 168 | 11.2 | .... |
| Fistula: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Perineal | .... | .... | .... | 1 | ...... | 1 | ...... | 1 | .... | .... | .... | 1 | 69 | 69.0 | .... |
| Urethral | .... | .... | .... | 3 | ...... | 3 | 2 | 1 | .... | .... | .... | 3 | 122 | 40.6 | .... |
| Urethro-rectal | 1 | .... | .... | ...... | ...... | 1 | ...... | 1 | .... | .... | .... | 1 | 27 | 27.0 | .... |
| Gonorrhea | .... | .... | .... | 5 | 10 | 15 | 6 | 8 | 1 | .... | .... | 15 | 134 | 9.0 | .... |
| Hematoma tunica vaginalis | .... | .... | .... | 1 | ...... | 1 | 1 | .... | .... | .... | .... | 1 | 24 | 24.0 | .... |
| Hematuria | .... | .... | .... | 1 | ...... | 1 | 1 | .... | .... | .... | .... | 1 | 34 | 34.0 | .... |
| Herpes | .... | .... | .... | ...... | 1 | 1 | ...... | 1 | .... | .... | .... | 1 | 1 | 1.0 | .... |
| Hydrocele | .... | .... | .... | 7 | ...... | 7 | 6 | 1 | .... | .... | .... | 7 | 130 | 18.5 | .... |

*Medical and surgical diseases*—Continued.

| Disease. | Remaining July 1, 1910. | Admitted. | | | | | Discharged. | | | | | | Total number of days in hospital. | Average number of days in hospital. | Remaining July 1, 1911. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | White. | | Colored. | | | | | | | | | | | |
| | | Male. | Female. | Male. | Female. | Total. | Recovered. | Improved. | Unimproved. | Not treated. | Died. | Total. | | | |
| *Genito-urinary*—Con. | | | | | | | | | | | | | | | |
| Nephritis: | | | | | | | | | | | | | | | |
| Acute parenchymatous | | | | 6 | 4 | 10 | 2 | 1 | | | 7 | 10 | 91 | 9.1 | |
| Chronic parenchymatous | | | | 6 | 4 | 10 | | 3 | | | 6 | 9 | 353 | 39.2 | 1 |
| Chronic interstitial | 3 | 3 | | 28 | 19 | 53 | 1 | 32 | | | 14 | 47 | 1,623 | 34.5 | 6 |
| Nephrolithiasis | | | | 1 | | 1 | | 1 | | | | 1 | 2 | 2.0 | |
| Pyonephrosis | 1 | | | 6 | 1 | 8 | | 3 | 1 | | 3 | 7 | 172 | 24.5 | 1 |
| Tuberculosis kidney | | | | 3 | 1 | 4 | 2 | 1 | | | | 3 | 210 | 70.0 | 1 |
| Uraemia | | | | 7 | 4 | 11 | | 2 | | | 8 | 10 | 108 | 10.8 | 1 |
| Orchitis: | | | | | | | | | | | | | | | |
| Traumatic | | | | 1 | | 1 | | | | | | | | | 1 |
| Suppurating | | | | 1 | | 1 | | 1 | | | | 1 | 12 | 12.0 | |
| Syphilitic | | | | 1 | | 1 | 1 | | | | | 1 | 19 | 19.0 | |
| Tubercular | 1 | | | 1 | | 2 | 1 | 1 | | | | 2 | 31 | 15.5 | |
| Phimosis | 1 | | | 22 | | 23 | 11 | 12 | | | | 23 | 452 | 19.6 | |
| Prostate: | | | | | | | | | | | | | | | |
| Carcinoma | | | | 1 | | 1 | | | | | 1 | 1 | 11 | 11.0 | |
| Hypertrophy | 1 | | | 12 | | 13 | | 9 | 1 | | 3 | 13 | 313 | 24.0 | |
| Retention urine | | | | 1 | 2 | 3 | 2 | 1 | | | | 3 | 23 | 7.6 | |
| Spermatocele | 1 | | | | | 1 | 1 | | | | | 1 | 11 | 11.0 | |
| Stricture urethra | | | | 13 | | 13 | 3 | 9 | | | 1 | 13 | 152 | 11.7 | |
| Undescended testicle | | | | 2 | | 2 | 1 | | | | | 1 | 25 | 25.0 | 1 |
| Varicocele | | | | 4 | | 4 | 3 | | | | | 3 | 82 | 27.3 | 1 |
| Vesical calculus | | | | 1 | | 1 | 1 | | | | | 1 | 36 | 36.0 | |
| *Gynecological.* | | | | | | | | | | | | | | | |
| Abortion | 2 | | | | | 44 | 46 | 30 | 9 | 1 | 2 | 42 | 415 | 9.8 | 4 |
| Abortion, threatened | | | | | 10 | 10 | 3 | 7 | | | | 10 | 98 | 9.8 | |
| Acute vaginitis | | | | | 4 | 4 | 1 | 3 | | | | 4 | 43 | 10.7 | |
| Anteflexion uterus | | | | | 1 | 1 | 1 | | | | | 1 | 12 | 12.0 | |
| Carcinoma cervix | 2 | | | | 20 | 22 | 2 | 9 | 9 | | 2 | 22 | 418 | 19.0 | |
| Cyst broad ligament | | | | | 3 | 3 | 3 | | | | | 3 | 86 | 28.6 | |
| Cystocele | | | | | 1 | 1 | 1 | | | | | 1 | 15 | 15.0 | |
| Dermoid cyst | 1 | | | | 1 | 2 | 1 | | | | 1 | 2 | 31 | 15.5 | |
| Ectopic gestation | 2 | | | | 4 | 6 | 6 | | | | | 6 | 213 | 35.5 | |
| Endometritis | 2 | | | | 11 | 13 | 7 | 3 | 2 | | | 12 | 195 | 16.2 | 1 |
| Fibroma uteri | 1 | | | | 80 | 81 | 56 | 9 | 4 | 1 | 1 | 71 | 1,675 | 23.5 | 10 |
| Fibroma and cyst broad ligament | | | | | 1 | 1 | | | | | 1 | 1 | 6 | 6.0 | |
| Fibroma and dermoid cyst | | | | | 2 | 2 | 2 | | | | | 2 | 61 | 30.5 | |
| Fibroma and pyosalpinx | 1 | | | | 4 | 5 | 1 | | | | 2 | 3 | 50 | 16.6 | 2 |
| Fistula: | | | | | | | | | | | | | | | |
| Vesico-vaginal | | | | | 3 | 3 | | 3 | | | | 3 | 276 | 92.0 | |
| Hydatidiform mole | | | | | 1 | 1 | 1 | | | | | 1 | 24 | 24.0 | |
| Lacerated cervix | | | | | 1 | 1 | 1 | | | | | 1 | 71 | 71.0 | |
| Lacerated perineum | | | | | 27 | 30 | 21 | 5 | 2 | | | 28 | 760 | 27.2 | 2 |
| Menstrual disorders: | | | | | | | | | | | | | | | |
| Memorrhagia | | | | | 3 | 3 | 2 | | 1 | | | 3 | 40 | 13.3 | |
| Obstructive dysmenorrhea | | | | | 1 | 1 | 1 | | | | | 1 | 14 | 14.0 | |
| Ovaritis | 2 | | | | 27 | 29 | 24 | 3 | 1 | | | 28 | 699 | 25.0 | 1 |
| Ovaritis and double uterus | | | | | 1 | 1 | 1 | | | | | 1 | 18 | 18.0 | |
| Ovarian cysts | | | | | 5 | 5 | 3 | 1 | | | 1 | 5 | 126 | 25.2 | |
| Perforated uterus gangrene intestines | | | | | 1 | 1 | | | | | 1 | 1 | 21 | 21.0 | |
| Post operative adhesions | 2 | | | | | 2 | 1 | | 1 | | | 2 | 54 | 27.0 | |
| Procidentia | | | | | 6 | 6 | 4 | | 1 | | 1 | 6 | 119 | 19.8 | |
| Pyosalpinx | 5 | | | | 70 | 75 | 40 | 22 | 7 | | 4 | 73 | 1,818 | 24.9 | 2 |
| Pyosalpinx and cystic ovaries | 2 | | | | | 2 | 2 | | | | | 2 | 56 | 28.0 | |
| Retroverted uterus | | | | | 4 | 4 | | 2 | 1 | | | 3 | 15 | 5.0 | 1 |
| Salpingitis | | | | | 71 | 71 | 37 | 264 | 2 | | | 69 | 1,435 | 20.8 | 2 |
| Salpingitis and appendicitis | 1 | | | | 4 | 5 | 5 | | | | | 5 | 135 | 27.0 | |
| Salpingitis and lacerated perineum | | | | | 2 | 2 | 2 | | | | | 2 | 50 | 25.0 | |
| Salpingitis and urethral caruncle | | | | | 1 | 1 | | 1 | | | | 1 | 14 | 14.0 | |

*Medical and surgical diseases*—Continued.

| Disease. | Remaining July 1, 1910. | Admitted. | | | | | Discharged. | | | | | | Total number of days in hospital. | Average number of days in hospital. | Remaining July 1, 1911. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | White. | | Colored. | | Total. | Recovered. | Improved. | Unimproved. | Not treated. | Died. | Total. | | | |
| | | Male. | Female. | Male. | Female. | | | | | | | | | | |
| *Infectious diseases.* | | | | | | | | | | | | | | | |
| Broncho-pneumonia | .... | .... | .... | 6 | 1 | 7 | 4 | .... | .... | .... | 1 | 5 | 60 | 12.0 | 2 |
| Cerebro spinal meningitis | .... | .... | .... | 1 | 3 | 4 | .... | .... | .... | .... | 4 | 4 | 24 | 6.0 | .... |
| Diphtheria | .... | .... | .... | .... | 1 | 1 | .... | .... | 1 | .... | .... | 1 | 1 | 1.0 | .... |
| Erysipelas | .... | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | 1 | 1 | 4 | 4.0 | .... |
| Febricula | .... | .... | .... | 1 | 1 | 2 | 2 | .... | .... | .... | .... | 2 | 23 | 11.5 | .... |
| Infantile paralysis | .... | .... | .... | .... | 1 | 1 | .... | 1 | .... | .... | .... | 1 | 48 | 48.0 | .... |
| Infectious arthriris | .... | .... | .... | 3 | .... | 3 | .... | 1 | .... | .... | .... | 1 | 48 | 48.0 | 2 |
| Influenza | .... | .... | .... | 5 | 6 | 11 | 9 | 2 | .... | .... | .... | 11 | 124 | 11.2 | .... |
| Malaria | .... | .... | .... | 2 | .... | 2 | 1 | .... | 1 | .... | .... | 2 | 9 | 4.5 | .... |
| Measles | .... | .... | .... | .... | 1 | 1 | 1 | .... | .... | .... | .... | 1 | 18 | 18.0 | .... |
| Parotiditis | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 3 | 3.0 | .... |
| Pneumonia, lobar | 4 | .... | .... | 28 | 35 | 67 | 44 | 6 | .... | .... | 16 | 66 | 1,288 | 19.5 | 1 |
| Rheumatism, articular | 3 | 1 | .... | 32 | 21 | 57 | 31 | 23 | 1 | .... | .... | 55 | 962 | 17.5 | 2 |
| Scarlet fever | 1 | .... | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | 1 | 3 | 3.0 | .... |
| Septicæmia | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | .... | 1 | 1 | 1 | 1.0 | .... |
| Syphilis: | | | | | | | | | | | | | | | |
| Congenital | .... | .... | .... | 1 | 1 | 2 | .... | 2 | .... | .... | .... | 2 | 43 | 21.5 | .... |
| Primary | .... | .... | .... | 1 | 1 | 2 | .... | 1 | .... | 1 | .... | 2 | 46 | 23.0 | .... |
| Secondary | .... | .... | .... | 8 | 1 | 9 | .... | 8 | 1 | .... | .... | 9 | 145 | 16.1 | .... |
| Tertiary | .... | .... | .... | 14 | 11 | 25 | 1 | 17 | 2 | .... | 3 | 23 | 586 | 25.4 | 2 |
| Tetanus | .... | .... | .... | 3 | .... | 3 | .... | .... | .... | .... | 3 | 3 | 6 | 2.0 | .... |
| Tuberculosis | .... | .... | 1 | 24 | 14 | 39 | .... | 15 | 19 | .... | 5 | 39 | 999 | 25.6 | .... |
| Typhoid fever | 4 | .... | .... | 22 | 24 | 50 | 41 | 2 | 1 | .... | 5 | 49 | 1,862 | 38.0 | 1 |
| Whooping cough | .... | .... | .... | .... | 1 | 1 | .... | 1 | .... | .... | .... | 1 | 1 | 1.0 | .... |
| *Injuries.* | | | | | | | | | | | | | | | |
| Burn: | | | | | | | | | | | | | | | |
| Body | .... | .... | .... | 1 | 3 | 4 | 1 | 1 | .... | .... | 2 | 4 | 130 | 32.5 | .... |
| Face | .... | 1 | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | 1 | 3 | 3.0 | .... |
| Hand | .... | .... | .... | 1 | .... | 1 | 1 | .... | .... | .... | .... | 1 | 4 | 4.0 | .... |
| Foot | .... | .... | .... | .... | 2 | 2 | .... | .... | .... | .... | .... | .... | .... | .... | 2 |
| Foreign bodies: | | | | | | | | | | | | | | | |
| Abdominal cavity | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | 1 | 1 | 19 | 19.0 | .... |
| Wounds: | | | | | | | | | | | | | | | |
| Contused— | | | | | | | | | | | | | | | |
| Back | .... | 1 | 1 | 1 | 1 | 4 | 3 | 1 | .... | .... | .... | 4 | 23 | 5.75 | .... |
| Face | .... | .... | 1 | 3 | .... | 4 | 1 | 3 | .... | .... | .... | 4 | 17 | 4.2 | .... |
| Foot | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 5 | 5.0 | .... |
| Hip | .... | .... | .... | 3 | 2 | 5 | 1 | 4 | .... | .... | .... | 5 | 49 | 9.8 | .... |
| Leg | .... | .... | .... | 2 | .... | 2 | .... | 2 | .... | .... | .... | 2 | 5 | 2.5 | .... |
| Neck | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 2 | 2.0 | .... |
| Scalp | .... | .... | .... | 5 | .... | 5 | 1 | 4 | .... | .... | .... | 5 | 18 | 3.6 | .... |
| Shoulder | .... | .... | .... | .... | 1 | 1 | 1 | .... | .... | .... | .... | 1 | 5 | 5.0 | .... |
| Gunshot— | | | | | | | | | | | | | | | |
| Abdomen | .... | 1 | .... | 1 | .... | 2 | .... | 1 | .... | .... | 1 | 2 | 33 | 16.5 | .... |
| Ankle | .... | .... | .... | 3 | .... | 3 | .... | 3 | .... | .... | .... | 3 | 159 | 53.0 | .... |
| Back | .... | .... | .... | 2 | .... | 2 | 1 | 1 | .... | .... | .... | 2 | 7 | 3.5 | .... |
| Forearm | .... | .... | .... | 2 | .... | 2 | 1 | .... | .... | .... | .... | 1 | 92 | 92.0 | .... |
| Knee | 1 | .... | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | 1 | 78 | 78.0 | .... |
| Spinal cord | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 26 | 26.0 | .... |
| Thigh | .... | .... | .... | 2 | .... | 2 | .... | 2 | .... | .... | .... | 2 | 34 | 17.0 | .... |
| Thorax | .... | .... | .... | 2 | .... | 2 | 1 | .... | .... | 1 | .... | 2 | 35 | 17.5 | .... |
| Incised— | | | | | | | | | | | | | | | |
| Abdomen | .... | 1 | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | 1 | 1 | 1.0 | .... |
| Eyelid | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | 1 |
| Face | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 7 | 7.0 | .... |
| Forearm | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 1 | 1.0 | .... |
| Neck | .... | .... | .... | 2 | .... | 2 | 2 | .... | .... | .... | .... | 2 | 20 | 10.0 | .... |
| Scalp | .... | 1 | .... | 1 | .... | 2 | .... | 2 | .... | .... | .... | 2 | 2 | 1.0 | .... |
| Lacerated— | | | | | | | | | | | | | | | |
| Eyelid | .... | .... | .... | 2 | .... | 2 | 1 | 1 | .... | .... | .... | 2 | 33 | 16.5 | .... |
| Face | .... | .... | .... | 4 | 1 | 5 | 1 | 3 | .... | .... | .... | 4 | 29 | 7.2 | 1 |
| Foot | 1 | 1 | .... | 1 | .... | 3 | 1 | 2 | .... | .... | .... | 3 | 138 | 46.0 | .... |
| Lip | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 6 | 6.0 | .... |
| Scalp | .... | 1 | .... | 4 | 1 | 6 | 3 | 3 | .... | .... | .... | 6 | 26 | 4.3 | .... |
| Punctured— | | | | | | | | | | | | | | | |
| Abdomen | .... | .... | .... | 2 | .... | 2 | 2 | .... | .... | .... | .... | 2 | 35 | 17.5 | .... |
| Chest | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 5 | 5.0 | .... |
| Eye | .... | .... | .... | .... | 1 | 1 | .... | 1 | .... | .... | .... | 1 | 1 | 1.0 | .... |
| Foot | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 4 | 4.0 | .... |
| Knee | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 5 | 5.0 | .... |
| Neck | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 3 | 3.0 | .... |

### *Medical and surgical diseases*—Continued.

| Disease. | Remaining July 1, 1910. | Admitted. | | | | | Discharged. | | | | | | Total number of days in hospital. | Average number of days in hospital. | Remaining July 1, 1911. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | White. | | Colored. | | Total. | Recovered. | Improved. | Unimproved. | Not treated. | Died. | Total. | | | |
| | | Male. | Female. | Male. | Female. | | | | | | | | | | |
| ***Lymphatics, peritoneum, and nervous system.*** | | | | | | | | | | | | | | | |
| Adenitis: | | | | | | | | | | | | | | | |
| Axillary | .... | .... | .... | .... | 2 | 2 | 2 | .... | .... | .... | .... | 2 | 20 | 10.0 | .... |
| Cervical | 2 | .... | .... | 10 | 17 | 29 | 12 | 13 | 2 | .... | .... | 27 | 490 | 18.1 | 2 |
| Inguinal | 7 | .... | .... | 29 | 16 | 52 | 20 | 26 | 3 | 1 | .... | 50 | 851 | 17.0 | 2 |
| Hodgkins disease | .... | .... | .... | .... | 1 | 1 | .... | 1 | .... | .... | .... | 1 | 18 | 18.0 | .... |
| Tubercular peritonitis | 1 | .... | .... | 4 | 9 | 14 | 2 | 10 | .... | .... | .... | 12 | 378 | 31.5 | 2 |
| Anterior poliomyelitis | .... | .... | .... | 2 | 1 | 3 | .... | 1 | 1 | .... | .... | 2 | 100 | 50.0 | 1 |
| Apoplexy | .... | .... | 1 | .... | 1 | 2 | .... | .... | .... | .... | 2 | 2 | 2 | 2.0 | .... |
| Cerebral embolus | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 9 | 9.0 | .... |
| Cerebral hemorrhage | 2 | .... | .... | 6 | 3 | 11 | .... | 3 | .... | .... | 4 | 7 | 282 | 40.3 | 4 |
| Cerebral syphilis | .... | .... | .... | 1 | .... | 1 | .... | .... | 1 | .... | .... | 1 | 8 | 8.0 | .... |
| Chorea | .... | .... | .... | .... | 2 | 2 | 1 | .... | .... | .... | .... | 1 | 17 | 17.0 | 1 |
| Dementia precox | .... | 1 | .... | 1 | .... | 2 | .... | .... | 2 | .... | .... | 2 | 12 | 6.0 | .... |
| Epilepsy | .... | 2 | .... | 6 | 5 | 13 | 2 | 7 | 3 | .... | .... | 12 | 56 | 4.6 | 1 |
| General paresis | .... | .... | .... | 2 | .... | 2 | .... | 1 | 1 | .... | .... | 2 | 72 | 36.0 | .... |
| Hydrocephalus | .... | .... | .... | 2 | .... | 2 | 1 | .... | .... | .... | 1 | 2 | 76 | 38.0 | .... |
| Hydrocephalus and spina bifida | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | 1 | 1 | 12 | 12.0 | .... |
| Hysteria | .... | 1 | 1 | 3 | 12 | 17 | 5 | 12 | .... | .... | .... | 17 | 212 | 12.5 | .... |
| Insanity | .... | .... | .... | .... | 2 | 2 | .... | 2 | 1 | .... | .... | 2 | 28 | 14.0 | .... |
| Lateral sclerosis | 1 | .... | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | 1 | 32 | 32.0 | .... |
| Nervous prostration | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | 1 | .... | 1 | 1 | 1.0 | .... |
| Neuralgia | .... | .... | .... | 2 | 4 | 6 | 3 | 3 | .... | .... | .... | 6 | 72 | 12.0 | .... |
| Neurasthenia | .... | 2 | .... | 6 | 6 | 14 | 3 | 7 | .... | .... | .... | 10 | 178 | 17.8 | 4 |
| Neuritis | 2 | .... | .... | 6 | 1 | 9 | 2 | 6 | .... | .... | .... | 8 | 461 | 57.6 | 1 |
| Paralysis: | | | | | | | | | | | | | | | |
| Arm | .... | .... | .... | 4 | .... | 4 | .... | 2 | 2 | .... | .... | 4 | 100 | .... | .... |
| Face | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 57 | 57.0 | .... |
| Hemiplegia | .... | .... | .... | 4 | .... | 4 | .... | 4 | .... | .... | .... | 4 | 177 | 44.2 | .... |
| Paraplegia | 1 | 1 | .... | 1 | .... | 3 | .... | 3 | .... | .... | .... | 3 | 566 | 155.3 | .... |
| Paralysis agitans | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | .... | .... | 1 |
| Recurrent laryngeal | .... | .... | .... | .... | 1 | 1 | .... | .... | 1 | .... | .... | 1 | 3 | 3.0 | .... |
| Paranoia | .... | .... | .... | .... | 1 | 1 | .... | 1 | .... | .... | .... | 1 | 17 | 17.0 | .... |
| Syncope | .... | .... | .... | 2 | .... | 2 | 1 | 1 | .... | .... | .... | 2 | 2 | 1.0 | .... |
| Tabes dorsalis | .... | .... | .... | 1 | .... | 1 | .... | 1 | .... | .... | .... | 1 | 8 | 8.0 | .... |
| Traumatic neurosis | .... | .... | .... | 2 | .... | 2 | 1 | .... | .... | .... | .... | 1 | 1 | 1.0 | 1 |
| Vertigo | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | 1 | .... | 1 | 1 | 1.0 | .... |
| ***Obstetrical.*** | | | | | | | | | | | | | | | |
| Births | .... | 1 | 1 | 145 | 101 | 248 | 225 | .... | .... | .... | 13 | 238 | 3,162 | 13.2 | 10 |
| Births remaining | 7 | .... | .... | .... | .... | 7 | 6 | .... | .... | .... | 1 | 7 | 204 | 29.1 | .... |
| Babies with mother | .... | .... | .... | 2 | 1 | 3 | .... | .... | .... | 3 | .... | 3 | 76 | 25.3 | .... |
| Pregnancy (delivered) | .... | .... | .... | .... | 276 | 282 | 266 | 2 | .... | .... | 2 | 270 | 5,704 | 21.2 | 12 |
| Pregnancy (undelivered) | .... | .... | .... | .... | 40 | 40 | .... | 6 | 30 | 1 | .... | 37 | 306 | 8.5 | 3 |
| Puerperal eclampsia | .... | .... | .... | .... | 1 | 1 | 1 | .... | .... | .... | .... | 1 | 58 | 58.0 | .... |
| Puerperal sepsis | 1 | .... | .... | .... | 3 | 4 | 3 | .... | .... | .... | 1 | 4 | 164 | 41.0 | .... |
| Puerperium | 7 | .... | .... | .... | 4 | 11 | 10 | 1 | .... | .... | .... | 11 | 266 | 24.1 | .... |
| Toxemia of pregnancy | 1 | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | 1 | 58 | 58.0 | .... |
| ***Poisoning.*** | | | | | | | | | | | | | | | |
| Alcoholism | 1 | 26 | .... | 24 | 4 | 55 | 24 | 29 | 1 | .... | 1 | 55 | 247 | 4.5 | .... |
| Auto-intoxication | 3 | 1 | .... | 5 | 7 | 16 | 10 | 4 | .... | .... | 1 | 15 | 129 | 8.6 | 1 |
| Carbolic acid | .... | .... | 1 | 2 | 2 | 5 | 4 | .... | .... | .... | 1 | 5 | 20 | 4.0 | .... |
| Ether | .... | .... | .... | .... | 1 | 1 | 1 | .... | .... | .... | .... | 1 | 1 | 1.0 | .... |
| Illuminating gas | .... | .... | .... | 1 | 1 | 2 | 2 | .... | .... | .... | .... | 2 | 3 | 1.5 | .... |
| Iodine | .... | .... | .... | .... | 1 | 1 | 1 | .... | .... | .... | .... | 1 | 3 | 3.0 | .... |
| Lead | .... | .... | .... | 1 | .... | 1 | 1 | .... | .... | .... | .... | 1 | 9 | 9.0 | .... |
| Mercury | .... | .... | .... | 1 | .... | 1 | 1 | .... | .... | .... | .... | 1 | 1 | 1.0 | .... |
| Ptomaine | .... | 1 | .... | 1 | .... | 2 | 2 | .... | .... | .... | .... | 2 | 5 | 2.5 | .... |
| Sunstroke | .... | .... | .... | 4 | 2 | 6 | 3 | 2 | .... | .... | 1 | 6 | 28 | 4.7 | .... |
| Turpentine | .... | .... | .... | .... | 1 | 1 | 1 | .... | .... | .... | .... | 1 | 2 | 2.0 | .... |
| ***Respiratory system.*** | | | | | | | | | | | | | | | |
| Bronchi: | | | | | | | | | | | | | | | |
| Bronchial asthma | .... | .... | .... | 1 | 2 | 3 | .... | .... | .... | .... | 1 | 1 | 4 | 4.0 | 2 |
| Bronchitis— | | | | | | | | | | | | | | | |
| Acute | .... | 1 | .... | 9 | 10 | 20 | 10 | 8 | 1 | .... | .... | 19 | 157 | 8.2 | 1 |
| Chronic | .... | .... | .... | 6 | 3 | 9 | 1 | 8 | .... | .... | .... | 9 | 231 | 25.5 | .... |
| Laryngitis, acute | .... | 1 | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | 1 | 9 | 9.0 | .... |

*Medical and surgical diseases*—Continued.

| Disease. | Remaining July 1, 1910. | Admitted. | | | | | Discharged. | | | | | | Total number of days in hospital. | Average number of days in hospital. | Remaining July 1, 1911. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | White. | | Colored. | | | | | | | | | | | |
| | | Male. | Female. | Male. | Female. | Total. | Recovered. | Improved. | Unimproved. | Not treated. | Died. | Total. | | | |
| ***Respiratory system*—Continued.** | | | | | | | | | | | | | | | |
| **Bronchi—Continued.** | | | | | | | | | | | | | | | |
| **Lungs—** | | | | | | | | | | | | | | | |
| **Emphysema** | | 1 | | 1 | | 2 | 1 | 1 | | | | 2 | 21 | 10.5 | |
| **Empyema** | 1 | | | | | 1 | 1 | | | | | 1 | 127 | 127.0 | |
| **Oedema** | | | | | 1 | 1 | | | | | 1 | 1 | 1 | 1.0 | |
| **Traumatic hemorrhage** | | | | 1 | | 1 | 1 | | | | | 1 | 6 | 6.0 | |
| **Pleura—** | | | | | | | | | | | | | | | |
| **Acute pleurisy** | | 1 | | 8 | 5 | 14 | 5 | 7 | | | 1 | 13 | 220 | 17.0 | 1 |
| **Chronic pleurisy** | | | | 1 | 1 | 2 | | 1 | | | | 1 | 17 | 17.0 | 1 |
| ***Skin.*** | | | | | | | | | | | | | | | |
| **Dermatitis** | | | | 2 | 1 | 3 | | 3 | | | | 3 | 150 | 50.0 | |
| **Eczema** | | 1 | | | 1 | 2 | | 2 | | | | 2 | 22 | 11.0 | |
| **Frost bite** | | | | 1 | 1 | 2 | | 2 | | | | 2 | 19 | 9.5 | |
| **Impetigo pustulosa** | | | | 1 | | 1 | | 1 | | | | 1 | 10 | 10.0 | |
| **Psoriasis** | 1 | | | | | 1 | | 1 | | | | 1 | 160 | 160.0 | |
| **Sensitive cicatrix** | | | | 1 | | 1 | 1 | | | | | 1 | 14 | 14.0 | |
| **Tinea tonsurans** | 1 | | | | | 1 | | 1 | | | | 1 | 17 | 17.0 | |
| ***Tumors and hypertrophies.*** | | | | | | | | | | | | | | | |
| **Angioma cheek** | | | | 1 | | 1 | 1 | | | | | 1 | 48 | 48.0 | |
| **Carcinoma:** | | | | | | | | | | | | | | | |
| **Breast** | 1 | | | | 11 | 12 | 7 | | 1 | | 2 | 10 | 507 | 50.7 | 2 |
| **Calcum** | | | | | 3 | 3 | 1 | 2 | | | | 3 | 92 | 30.6 | |
| **Eye** | | 1 | | | | 1 | | 1 | | | | 1 | 28 | 28.0 | |
| **Lip** | | | | 1 | | 1 | | | | | 1 | 1 | 23 | 23.0 | |
| **Pancreas** | | | | 2 | | 2 | | | | | 2 | 2 | 141 | 70.5 | |
| **Pleura** | | | | | 1 | 1 | | | | | | | | | 1 |
| **Prostate** | | | | 1 | | 1 | | | | | 1 | 1 | 5 | 5.0 | |
| **Rectum** | | | | 1 | | 1 | | | 1 | | | 1 | 19 | 19.0 | |
| **Scalp** | | | | | 1 | 1 | | | | | | | | | 1 |
| **Vulva** | | | | | 1 | 1 | 1 | | | | | 1 | 10 | 10.0 | |
| **Condylomata:** | | | | | | | | | | | | | | | |
| **Anus** | | | | 1 | 1 | 2 | 2 | | | | | 2 | 72 | 36.0 | |
| **Penis** | | | | 2 | | 2 | | 2 | | | | 2 | 11 | 5.5 | |
| **Vulva** | | | | | 5 | 5 | 1 | 4 | | | | 5 | 46 | 9.2 | |
| **Fibroma:** | | | | | | | | | | | | | | | |
| **Chest wall** | | | | 1 | | 1 | 1 | | | | | 1 | 48 | 48.0 | |
| **Mammary gland** | | | | | 1 | 1 | 1 | | | | | 1 | 13 | 13.0 | |
| **Goiter:** | | | | | | | | | | | | | | | |
| **Colloid** | | | | | 1 | 1 | 1 | | | | | 1 | 12 | 12.0 | |
| **Cystic** | | | | | 1 | 1 | 1 | | | | | 1 | 17 | 17.0 | |
| **Exoplethalmic** | | | | | 2 | 2 | 1 | | | | 1 | 2 | 26 | 13.0 | |
| **Desmoid tumor** | | | | | 1 | 1 | | | | | 1 | 1 | 7 | 7.0 | |
| **Hypertrophy:** | | | | | | | | | | | | | | | |
| **Cervix uteri** | | | | | 2 | 2 | 1 | | | | | 1 | 25 | 25.0 | 1 |
| **Clitoris** | | | | | 1 | 1 | | 1 | | | | 1 | 11 | 11.0 | |
| **Labia majora** | | | | | 1 | 1 | 1 | | | | | 1 | 65 | 65.0 | |
| **Keloid ear** | | | | 1 | 1 | 2 | 1 | 1 | | | | 2 | 3 | 1.5 | |
| **Lipoma:** | | | | | | | | | | | | | | | |
| **Chest wall** | | | | | 2 | 2 | 2 | | | | | 2 | 37 | 18.5 | |
| **Neck** | | | | 3 | | 3 | 1 | 2 | | | | 3 | 74 | 24.6 | |
| **Shoulder** | | | | | 1 | 1 | 1 | | | | | 1 | 21 | 21.0 | |
| **Myoma legs** | | | | | 1 | 1 | 1 | | | | | 1 | 46 | 46.0 | |
| **Sarcoma:** | | | | | | | | | | | | | | | |
| **Frontal bone** | | | | | 1 | 1 | | | | | 1 | 1 | 68 | 68.0 | |
| **Ilium** | | | | | 1 | 1 | | 1 | | | | 1 | 93 | 93.0 | |
| **Ovaries** | | | | | 1 | 1 | | | | | | | | | 1 |
| **Parotid gland** | | | | | 1 | 1 | 1 | | | | | 1 | 13 | 13.0 | |
| **Temporal bone** | | | | | 1 | 1 | | | | | | 1 | 2 | 2.0 | |
| **Thigh** | | | | 1 | | 1 | | | | | 1 | 1 | 82 | 82.0 | |
| **Submaxillary cyst** | | | | 1 | 1 | 2 | 1 | 1 | | | | 1 | 11 | 11.0 | 1 |
| **Total** | 154 | 74 | 10 | 1,164 | 1,498 | 2,900 | 1,416 | 919 | 138 | 17 | 234 | 2,724 | | | 176 |
| **Stillbirths** | | | | 25 | 17 | 42 | | | | | | 42 | | | |

*Operations and results.*

| Operation. | Diagnosis. | White. |  | Colored. |  | Total. | Recovered. | Improved. | Unimproved. | Died. |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  | Male. | Female. | Male. | Female. |  |  |  |  |  |
| Amputation | Carcinoma cervix |  |  |  | 1 | 1 |  | 1 |  |  |
|  | Gangrene of foot |  |  | 4 | 3 | 7 | 3 | 2 |  | 2 |
|  | Gunshot wound, arm |  |  | 1 |  | 1 |  | 1 |  |  |
|  | Infected finger |  |  | 1 |  | 1 | 1 |  |  |  |
|  | Infected leg |  |  |  | 1 | 1 |  | 1 |  |  |
|  | Lacerated cervix |  |  |  | 1 | 1 | 1 |  |  |  |
|  | Procidentia |  |  |  | 1 | 1 |  |  |  | 1 |
|  | Thrombosis femoral artery |  |  |  | 1 | 1 |  |  | 1 |  |
|  | Tuberculosis knee |  |  | 1 |  | 1 | 1 |  |  |  |
|  | Acute cholangitis |  |  |  | 1 | 1 |  |  |  | 1 |
|  | Gonorrheal arthritis |  |  |  | 1 | 1 |  | 1 |  |  |
|  | Tubercular abscess: |  |  |  |  |  |  |  |  |  |
|  | Back |  |  | 1 |  | 1 |  | 1 |  |  |
|  | Cheek |  |  |  | 1 | 1 | 1 |  |  |  |
|  | Neck |  |  |  | 1 | 1 |  | 1 |  |  |
| Cauterization | Carcinoma cervix |  |  |  | 3 | 3 |  | 3 |  |  |
|  | Chancroid penis | 1 |  | 6 |  | 7 | 1 | 6 |  |  |
|  | Condylomata |  |  | 1 |  | 1 |  | 1 |  |  |
|  | Dog-bite, leg |  |  | 1 |  | 1 | 1 |  |  |  |
|  | Fissured nipple |  |  |  | 1 | 1 | 1 |  |  |  |
|  | Lachrymal fistula |  |  | 1 |  | 1 |  | 1 |  |  |
|  | Verruca |  |  |  | 1 | 1 |  | 1 |  |  |
| Celiotomy: |  |  |  |  |  |  |  |  |  |  |
| Appendicectomy | Catarrhal appendicitis |  |  | 4 | 6 | 10 | 9 |  | 1 |  |
|  | Chronic appendicitis |  |  | 1 | 3 | 4 | 4 |  |  |  |
|  | Gangrenous appendicitis |  |  | 7 |  | 7 | 3 | 1 |  | 3 |
| Cæsarian section | Contracted pelvis |  |  |  | 1 | 1 | 1 |  |  |  |
| Cholecystenterostomy | Carcinoma pancreas |  |  | 2 |  | 2 |  |  |  | 2 |
| Cholecystostomy | Cholecystitis |  |  | 3 | 4 | 7 | 3 | 2 |  | 2 |
|  | Cholelithiasis |  |  |  | 2 | 2 | 1 | 1 |  |  |
| Exploratory | Acute abdominal pain |  |  | 1 | 2 | 3 | 1 | 1 |  | 1 |
|  | Gunshot wound abdomen | 1 |  |  |  | 1 |  |  |  | 1 |
|  | Injury brachial plexis |  |  | 1 |  | 1 |  |  | 1 |  |
|  | Neurasthenia |  |  | 1 | 1 | 2 | 2 |  |  |  |
|  | Pelvic abscess, complicating pregnancy. |  |  |  | 1 | 1 | 1 |  |  |  |
|  | Stab wound, abdomen | 1 |  |  |  | 1 |  | 1 |  |  |
|  | Trauma of abdomen |  |  | 1 |  | 1 | 1 |  |  |  |
|  | Tubercular peritonitis |  |  | 1 | 3 | 4 | 1 | 3 |  |  |
| Freeing adhesions | Incarcerated pregnant uterus |  |  |  | 2 | 2 | 1 | 1 |  |  |
| Gastro-enterostomy | Gastric cancer |  |  |  | 5 | 5 | 1 | 4 |  |  |
|  | Gastric ulcer |  |  | 1 |  | 1 |  |  |  | 1 |
| Gastrostomy | Gastric cancer |  |  | 1 |  | 1 |  |  |  | 1 |
| Hysterectomy: |  |  |  |  |  |  |  |  |  |  |
| Abdominal | Bilateral ovarian cysts |  |  |  | 1 | 1 |  |  |  | 1 |
|  | Carcinoma cervix |  |  |  | 5 | 5 | 2 | 2 |  | 1 |
|  | Fibroma uteri and polypus |  |  |  | 1 | 1 | 1 |  |  |  |
| Vaginal | Procidentia |  |  |  | 4 | 4 | 4 |  |  |  |
| Hystero-salpingo-oöphorectomy. | Bilateral pyosalpinx |  |  |  | 29 | 29 | 24 | 3 |  | 2 |
|  | Dermoid cyst and fibroma uteri. |  |  |  | 1 | 1 | 1 |  |  |  |
|  | Cyst of broad ligament |  |  |  | 1 | 1 | 1 |  |  |  |
|  | Double uterus |  |  |  | 1 | 1 | 1 |  |  |  |
|  | Ectopic pregnancy |  |  |  | 2 | 2 | 2 |  |  |  |
|  | Fibroma uteri |  |  |  | 57 | 57 | 50 | 4 |  | 3 |
|  | Fibroma uteri and ovarian cyst. |  |  |  | 3 | 3 | 3 |  |  |  |
|  | Fibroma uteri and pyosalpinx |  |  |  | 4 | 4 | 2 |  |  | 2 |
|  | Ovarian cyst |  |  |  | 1 | 1. |  | 1 |  |  |
|  | Ruptured pyosalpinx |  |  |  | 1 | 1 |  |  |  | 1 |
|  | Tubercular pyosalpinx |  |  |  | 1 | 1 |  |  |  | 1 |
| Myomectomy | Subperitoneal fibroid |  |  |  | 6 | 6 | 6 |  |  |  |
| Oöphorectomy | Cystic ovaries |  |  |  | 3 | 3 | 3 |  |  |  |
| Oöphorectomy and appendectomy. | Cystic ovaries and appendicitis |  |  |  | 3 | 3 | 3 |  |  |  |
| Salpingectomy and plastic ovaries. | Salpingitis and cystic ovaries |  |  |  | 6 | 6 | 6 |  |  |  |
| Salpingo-oöphorectomy | Cystic ovaries |  |  |  | 8 | 8 | 8 |  |  |  |
|  | Ectopic pregnancy |  |  |  | 3 | 3 | 3 |  |  |  |
|  | Ruptured dermoid cyst |  |  |  | 1 | 1 |  |  |  | 1 |
|  | Salpingitis and cystic ovaries |  |  |  | 48 | 48 | 45 | 3 |  |  |
|  | Sarcoma ovaries |  |  |  | 1 | 1 |  | 1 |  |  |
| Circumcision | Phimosis | 1 |  | 55 |  | 56 | 50 | 6 |  |  |
| Curettage | Carcinoma cervix |  |  |  | 1 | 1 |  | 1 |  |  |
|  | Endometritis |  |  |  | 10 | 10 | 10 |  |  |  |
|  | Hydatiform mole |  |  |  | 1 | 1 | 1 |  |  |  |
|  | Obstructive dysmenorrhea |  |  |  | 1 | 1 | 1 |  |  |  |
|  | Osteomyelitis toe |  |  | 1 |  | 1 |  | 1 |  |  |
|  | Periostitis nasal septum |  |  | 1 |  | 1 |  | 1 |  |  |

*Operations and results*—Continued.

| Operation. | Diagnosis. | White. |  | Colored. |  | Total. | Recovered. | Improved. | Unimproved. | Died. |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  | Male. | Female. | Male. | Female. |  |  |  |  |  |
| Curettage | Retained placental tissue | ... | ... | ... | 12 | 12 | 6 | 4 | ... | 2 |
|  | Tuberculosis elbow | 1 | ... | 1 | ... | 2 | ... | 2 | ... | ... |
|  | Urethral fistula | ... | ... | 1 | ... | 1 | ... | 1 | ... | ... |
| Cystostomy | Hypertrophy of prostate | ... | ... | 2 | ... | 2 | ... | 1 | ... | 1 |
|  | Urethral stricture | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... |
|  | Vesical calculus | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... |
| Dilatation | Fissure in ano | ... | ... | 2 | 2 | 4 | 4 | ... | ... | ... |
|  | Stricture rectum | ... | ... | 1 | 2 | 3 | ... | 3 | ... | ... |
|  | Stricture urethra | ... | ... | 1 | ... | 1 | ... | 1 | ... | ... |
| Enucleation | Phthisis bulbi | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Ruptured eyeball | ... | ... | 2 | ... | 2 | ... | 2 | ... | ... |
| Excision | Adeno-sarcoma parotid | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Adeno-carcinoma scalp | ... | ... | ... | 1 | 1 | ... | 1 | ... | ... |
|  | Adenoids | ... | ... | 104 | 63 | 167 | 167 | ... | ... | ... |
|  | Axillary adenitis | ... | ... | ... | 2 | 2 | 2 | ... | ... | ... |
|  | Bunion | ... | ... | ... | 1 | 1 | ... | 1 | ... | ... |
|  | Carcinoma breast | ... | ... | ... | 11 | 11 | 8 | ... | ... | 3 |
|  | Cervical adenitis | ... | ... | 7 | 10 | 17 | 13 | 4 | ... | ... |
|  | Chronic dachryocystitis | ... | ... | ... | 1 | 1 | ... | 1 | ... | ... |
|  | Chronic inflammation submaxillary gland | ... | ... | 1 | 1 | 2 | 2 | ... | ... | ... |
|  | Chronic mastitis | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Cyst of broad ligament | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Condylomata anus | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... |
|  | Deflected septum of nose | ... | ... | 1 | 2 | 3 | 3 | ... | ... | ... |
|  | Dermoid of skin | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Elongated uvula | ... | ... | 2 | 2 | 4 | 4 | ... | ... | ... |
|  | Epithelioma of lips | ... | ... | 1 | ... | 1 | ... | ... | ... | 1 |
|  | Excess fat on quadriceps tendon | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... |
|  | Femoral adenitis | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Fibroma: |  |  |  |  |  |  |  |  |  |
|  | Arm | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... |
|  | Breast | ... | ... | 2 | 1 | 3 | 3 | ... | ... | ... |
|  | Forehead | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Fistula in ano | ... | ... | 9 | 8 | 17 | 12 | 5 | ... | ... |
|  | Fissure in ano | ... | ... | 1 | 2 | 3 | 3 | ... | ... | ... |
|  | Ganglion wrist | ... | ... | 1 | 1 | 2 | 2 | ... | ... | ... |
|  | Goiter: |  |  |  |  |  |  |  |  |  |
|  | Colloid | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Cystic | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Exophthalmic | ... | ... | ... | 2 | 2 | 1 | ... | ... | 1 |
|  | Gumma of testicle | ... | ... | 2 | ... | 2 | 1 | 1 | ... | ... |
|  | Hemorrhoids: |  |  |  |  |  |  |  |  |  |
|  | External | ... | ... | 1 | 1 | 2 | 2 | ... | ... | ... |
|  | Internal | ... | ... | 4 | 2 | 6 | 6 | ... | ... | ... |
|  | Hydrocele | ... | ... | 6 | ... | 6 | 5 | 1 | ... | ... |
|  | Hypertrophy of clitoris | ... | ... | ... | 1 | 1 | ... | 1 | ... | ... |
|  | Hypertrophy labia majora | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Hypertrophy of tonsils | ... | ... | 40 | 163 | 203 | 203 | ... | ... | ... |
|  | Hypertrophy lingual tonsils | ... | ... | 3 | 2 | 5 | 5 | ... | ... | ... |
|  | Hypertrophy of turbinate | ... | ... | 8 | 8 | 16 | 16 | ... | ... | ... |
|  | Ingrown toenail | ... | ... | 3 | 2 | 5 | 5 | ... | ... | ... |
|  | Inguinal adenitis | ... | ... | 13 | 9 | 22 | 10 | 12 | ... | ... |
|  | Keloid ear | ... | ... | ... | 2 | 2 | 1 | 1 | ... | ... |
|  | Lipoma: |  |  |  |  |  |  |  |  |  |
|  | Neck | ... | ... | 4 | ... | 4 | 1 | 3 | ... | ... |
|  | Shoulder | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Thigh | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Thorax | ... | ... | ... | 2 | 2 | 2 | ... | ... | ... |
|  | Myoma leg | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Nasal polypi | ... | ... | 1 | 2 | 3 | 3 | ... | ... | ... |
|  | Pancreatic fistula | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Papilloma of anus | ... | ... | 1 | 1 | 2 | 2 | ... | ... | ... |
|  | Periurethral scar tissue | ... | ... | 2 | ... | 2 | 1 | 1 | ... | ... |
|  | Preolecranon bursitis | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Salivary calculus | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... |
|  | Sebaceous cyst | ... | ... | 2 | 2 | 4 | 4 | ... | ... | ... |
|  | Sensitive cicatrix | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... |
|  | Sinus abdominal wall | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Spina bifida | ... | ... | ... | 1 | 1 | ... | ... | ... | 1 |
|  | Tubercular epididymitis | ... | ... | 1 | ... | 1 | ... | 1 | ... | ... |
|  | Tuberculosis, knee joint | ... | ... | ... | 1 | 1 | ... | 1 | ... | ... |
|  | Tubercular orchitis | ... | ... | 2 | ... | 2 | 1 | 1 | ... | ... |
|  | Ulcerated external hemorrhoid | ... | ... | 2 | 1 | 3 | 3 | ... | ... | ... |
|  | Urethral caruncle | ... | ... | ... | 1 | 1 | ... | 1 | ... | ... |
|  | Varicose veins leg | ... | ... | 4 | 8 | 12 | 8 | 3 | ... | 1 |
|  | Verruca thumb | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |

*Operations and results*—Continued.

| Operation. | Diagnosis. | White. |  | Colored. |  | Total. | Recovered. | Improved. | Unimproved. | Died. |
|---|---|---|---|---|---|---|---|---|---|---|
|  |  | Male. | Female. | Male. | Female. |  |  |  |  |  |
| Hernioplasty | Hernia: |  |  |  |  |  |  |  |  |  |
|  | Femoral | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... |
|  | Direct inguinal | 2 | ... | 4 | ... | 6 | 6 | ... | ... | ... |
|  | Indirect inguinal | ... | ... | 19 | 4 | 23 | 22 | ... | ... | 1 |
|  | Strangulated inguinal | ... | ... | 2 | ... | 2 | 1 | ... | ... | 1 |
|  | Umbilical | ... | ... | 1 | 1 | 2 | 2 | ... | ... | ... |
|  | Ventral | ... | ... | 3 | 4 | 7 | 5 | 1 | 1 | ... |
| Hernioplasty and excision | Inguinal hernia and hydrocele | ... | ... | 2 | ... | 2 | 1 | 1 | ... | ... |
| Hernioplasty and correction | Inguinal hernia and undescended testicle. | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... |
| Incision | Abscess: |  |  |  |  |  |  |  |  |  |
|  | Abdominal wall | ... | ... | 3 | 1 | 4 | 3 | 1 | ... | ... |
|  | Alveolar | ... | ... | 6 | 1 | 7 | 6 | 1 | ... | ... |
|  | Appendiceal | ... | ... | 2 | ... | 2 | 1 | 1 | ... | ... |
|  | Axillary | ... | ... | 1 | 2 | 3 | 3 | ... | ... | ... |
|  | Back | ... | ... | 2 | 1 | 3 | 1 | 2 | ... | ... |
|  | Chin | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | External ear | ... | ... | 1 | 1 | 2 | 2 | ... | ... | ... |
|  | Knee joint | ... | ... | ... | 1 | 1 | ... | 1 | ... | ... |
|  | Leg | ... | ... | 2 | 1 | 3 | 2 | 1 | ... | ... |
|  | Liver | ... | ... | ... | 1 | 1 | ... | 1 | ... | ... |
|  | Vulva | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Cellulitis of leg | ... | ... | 1 | ... | 1 | ... | 1 | ... | ... |
|  | Chancroidal phimosis | ... | ... | 1 | ... | 1 | ... | 1 | ... | ... |
|  | Epididymitis | ... | ... | 3 | ... | 3 | 2 | 1 | ... | ... |
|  | Extravasation urine in scrotum | ... | ... | 1 | ... | 1 | ... | ... | ... | 1 |
|  | Femoral adenitis | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... |
|  | Fistulo in ano | ... | ... | 2 | ... | 2 | 1 | 1 | ... | ... |
|  | Furuncle of neck | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... |
|  | Fibrous ankylosis, knee | ... | ... | 3 | ... | 3 | ... | 3 | ... | ... |
|  | Gangrene of penis | ... | ... | 2 | ... | 2 | ... | 2 | ... | ... |
|  | Gunshot wound of ankle | ... | ... | 2 | ... | 2 | ... | 2 | ... | ... |
|  | Hæmatoma of scalp | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... |
|  | Infected foot | ... | ... | 1 | 1 | 2 | 1 | 1 | ... | ... |
|  | Infected finger | 2 | ... | 8 | 6 | 16 | 15 | 1 | ... | ... |
|  | Infected fracture inferior maxilla. | ... | ... | 1 | ... | 1 | ... | 1 | ... | ... |
|  | Ischio-rectal abscess | ... | ... | 3 | ... | 3 | ... | 2 | ... | 1 |
|  | Ludwigs angina | ... | ... | ... | 1 | 1 | ... | 1 | ... | ... |
|  | Oedema of lip | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... |
|  | Otitis media, suppurative | ... | 1 | 1 | ... | 2 | 2 | ... | ... | ... |
|  | Ovarian cyst | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Pancreatitis, acute | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Paronychia | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Pelvic abscess | ... | ... | ... | 9 | 9 | 6 | 2 | ... | 1 |
|  | Perinephritic abscess | ... | ... | 2 | ... | 2 | 2 | ... | ... | ... |
|  | Peritonsillar abscess | ... | ... | 4 | 5 | 9 | 9 | ... | ... | ... |
|  | Periurethral abscess | ... | ... | 9 | ... | 9 | 3 | 6 | ... | ... |
|  | Pyemia with multiple abscesses | ... | ... | 1 | ... | 1 | ... | ... | ... | 1 |
|  | Ranula | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... |
|  | Sebaceous cyst | ... | ... | 2 | ... | 2 | 2 | ... | ... | ... |
|  | Suppurating cervical adenitis | 1 | ... | 5 | 2 | 8 | 3 | 5 | ... | ... |
|  | Suppurating inguinal adenitis | ... | ... | 4 | 3 | 7 | 4 | 3 | ... | ... |
| Ligation dorsal vein | Sexual impotence | ... | ... | 2 | ... | 2 | 2 | ... | ... | ... |
| Nephrectomy | Hematuria | ... | ... | 1 | ... | 1 | 1 | ... | ... | ... |
|  | Pyonephrosis | ... | ... | 2 | 1 | 3 | 2 | 1 | ... | ... |
|  | Tuberculosis kidney | ... | ... | 2 | ... | 2 | 1 | 1 | ... | ... |
| Nephrotomy | Chronic interstitial nephritis | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Pyonephrosis | ... | ... | 1 | ... | 1 | ... | 1 | ... | ... |
| Osteotomy | Bunion | ... | ... | ... | 1 | 1 | 1 | ... | ... | ... |
|  | Dislocated cervical vertebra | ... | ... | 1 | ... | 1 | ... | ... | ... | 1 |
|  | Empyema antrum of Highmore | ... | ... | 2 | 2 | 4 | 4 | ... | ... | ... |
|  | Empyema frontal sinus | ... | ... | 1 | ... | 1 | ... | 1 | ... | ... |
|  | Genu valgum | ... | ... | 4 | 1 | 5 | 3 | 2 | ... | ... |
|  | Gunshot wound, spine | ... | ... | 1 | ... | 1 | ... | 1 | ... | ... |
|  | Mastoiditis | ... | ... | 1 | 1 | 2 | 1 | ... | ... | 1 |
|  | Necrosis sacrum | ... | ... | 1 | ... | 1 | ... | 1 | ... | ... |
|  | Osteomyelitis: |  |  |  |  |  |  |  |  |  |
|  | Crest of ilium | ... | ... | 1 | ... | 1 | ... | 1 | ... | ... |
|  | Femur | ... | ... | 1 | 1 | 2 | ... | 2 | ... | ... |
|  | Tibia | ... | ... | 5 | ... | 5 | ... | 5 | ... | ... |
|  | Tuberculosis, knee joint | ... | ... | 1 | ... | 1 | ... | 1 | ... | ... |
| Perineal section | Hypertrophy prostate | ... | ... | 1 | ... | 1 | ... | 1 | ... | ... |
|  | Urethral fistula | ... | ... | 2 | ... | 2 | ... | 1 | ... | 1 |
|  | Urethral stricture | ... | ... | 2 | ... | 2 | 1 | 1 | ... | .. |
|  | Vesical calculus | ... | ... | 1 | ... | 1 | ... | ... | ... | 1 |

*Operations and results*—Continued.

| Operation. | Diagnosis. | White. Male. | White. Female. | Colored. Male. | Colored. Female. | Total. | Recovered. | Improved. | Unimproved. | Died. |
|---|---|---|---|---|---|---|---|---|---|---|
| **Plastic** | Contracture palmar fascia |  |  |  | 1 | 1 |  | 1 |  |  |
|  | Cystic ovaries |  |  |  | 5 | 5 | 4 | 1 |  |  |
|  | Cystocele |  |  |  | 1 | 1 | 1 |  |  |  |
|  | Ectropion |  |  |  | 4 | 4 |  | 4 |  |  |
|  | Lacerated perineum |  |  |  | 6 | 6 | 5 | 1 |  |  |
|  | Lacerated perineum and cystic ovaries. |  |  |  | 6 | 6 | 5 | 1 |  |  |
|  | Lacerated perineum and cervix |  |  |  | 6 | 6 | 6 |  |  |  |
|  | Lacerated perineum and cystocele. |  |  |  | 2 | 2 | 2 |  |  |  |
|  | Recto-vaginal fistula |  |  |  | 1 | 1 |  | 1 |  |  |
|  | Undescended testicle |  |  | 1 |  | 1 | 1 |  |  |  |
|  | Vesico-vaginal fistula |  |  |  | 1 | 1 |  | 1 |  |  |
| **Reduction** | Dislocation: |  |  |  |  |  |  |  |  |  |
|  | Dorsal vertebra (tenth) |  |  | 1 |  | 1 |  | 1 |  |  |
|  | Femur |  |  |  | 1 | 1 |  | 1 |  |  |
|  | Humerus |  |  | 6 |  | 6 | 2 | 4 |  |  |
|  | Radius and ulna |  |  | 1 | 2 | 3 |  | 3 |  |  |
|  | Semilunar cartilage |  |  | 1 |  | 1 | 1 |  |  |  |
|  | Tarsal bone |  |  | 1 |  | 1 |  | 1 |  |  |
|  | Fracture: |  |  |  |  |  |  |  |  |  |
|  | Acromion process |  |  | 1 |  | 1 |  | 1 |  |  |
|  | Clavicle | 1 |  | 2 |  | 3 |  | 3 |  |  |
|  | Femur | 1 |  | 1 |  | 2 |  | 2 |  |  |
|  | Fibula |  |  | 3 |  | 3 |  | 3 |  |  |
|  | Humerus |  |  | 4 | 1 | 5 |  | 5 |  |  |
|  | Inferior maxilla |  |  | 2 | 1 | 3 | 1 | 2 |  |  |
|  | Nasal bones | 1 |  | 1 |  | 2 |  | 2 |  |  |
|  | Olecranon process |  |  | 1 |  | 1 | 1 |  |  |  |
|  | Patella |  |  | 1 |  | 1 |  | 1 |  |  |
|  | Phalanx |  |  | 1 |  | 1 |  | 1 |  |  |
|  | Radius |  |  | 6 | 4 | 10 |  | 10 |  |  |
|  | Rib | 2 |  | 2 | 4 | 8 | 1 | 7 |  |  |
|  | Skull | 1 |  | 7 |  | 8 | 2 | 4 | 1 | 1 |
|  | Superior maxilla |  |  | 1 |  | 1 |  | 1 |  |  |
|  | Tibia |  |  | 8 |  | 8 | 3 | 4 | 1 |  |
|  | Tibia and fibula | 1 |  | 2 |  | 3 | 1 | 2 |  |  |
|  | Ulna |  |  |  | 3 | 3 |  | 3 |  |  |
| **Removal** | Bullet in ankle |  |  | 3 | 1 | 4 | 2 | 2 |  |  |
|  | Callus about fracture |  |  | 1 |  | 1 | 1 |  |  |  |
|  | Fragments of frontal bone |  |  | 1 |  | 1 | 1 |  |  |  |
|  | Needle in finger |  |  |  | 1 | 1 | 1 |  |  |  |
|  | Needle in lip |  |  |  | 1 | 1 | 1 |  |  |  |
|  | Silver plate in tibia |  |  | 2 |  | 2 | 1 | 1 |  |  |
|  | Sponges in abdomen |  |  |  | 1 | 1 |  | 1 |  |  |
| **Resection:** |  |  |  |  |  |  |  |  |  |  |
| **Bursa** | Infected bursa in stump |  |  | 1 |  | 1 |  | 1 |  |  |
| **Intestine** | Carcinoma caecum |  |  |  | 1 | 1 | 1 |  |  |  |
|  | Gunshot wound |  |  | 1 |  | 1 |  | 1 |  |  |
|  | Incised wound |  |  | 1 |  | 1 | 1 |  |  |  |
|  | Intestinal obstruction | 1 |  | 2 | 3 | 6 | 1 |  |  | 5 |
|  | Multiple fistula |  |  |  | 1 | 1 |  |  |  | 1 |
|  | Strangulated hernia and undescended testicle. |  |  | 1 |  | 1 | 1 |  |  |  |
|  | Strangulated intestines in perforated uterus. |  |  |  | 1 | 1 |  |  |  | 1 |
|  | Tuberculosis caecum |  |  |  | 1 | 1 |  | 1 |  |  |
| **Knee joint** | Tuberculosis knee |  |  | 1 |  | 1 | 1 |  |  |  |
| **Rib** | Carcinoma pleura |  |  |  | 1 | 1 |  | 1 |  |  |
| **Tuberosity of humerus** | Fracture anatomical neck of humerus. |  |  | 1 |  | 1 |  | 1 |  |  |
| **Veins** | Varicocele |  |  | 4 |  | 4 | 4 |  |  |  |
| **Shortening round ligaments** | Prolapsed uterus |  |  |  | 1 | 1 | 1 |  |  |  |
| **Skin graft** | Ulcer of foot |  |  | 1 |  | 1 |  | 1 |  |  |
|  | Ulcer of leg |  |  |  | 1 | 1 | 1 |  |  |  |
|  | Ulcer thorax |  |  |  | 1 | 1 | 1 |  |  |  |
| **Strapping** | Sprain: |  |  |  |  |  |  |  |  |  |
|  | Elbow |  |  |  | 1 | 1 |  | 1 |  |  |
|  | Finger |  |  | 1 |  | 1 |  | 1 |  |  |
|  | Knee |  |  |  | 1 | 1 |  | 1 |  |  |
|  | Wrist |  |  | 1 |  | 1 |  | 1 |  |  |
| **Suturing** | Fecal fistula |  |  |  | 1 | 1 | 1 |  |  |  |
|  | Fractured patella |  |  | 1 |  | 1 |  | 1 |  |  |
|  | Incised wound | 6 | 2 | 84 | 17 | 109 | 109 |  |  |  |
|  | Lacerated wound | 53 | 3 | 231 | 47 | 334 | 334 |  |  |  |
|  | Nephroptosis |  |  |  | 1 | 1 | 1 |  |  |  |

## *Operations and results*—Continued.

| Operation. | Diagnosis. | White. Male. | White. Female. | Colored. Male. | Colored. Female. | Total. | Recovered. | Improved. | Unimproved. | Died. |
|---|---|---|---|---|---|---|---|---|---|---|
| Suturing | Recto-vaginal fistula |  |  |  | 1 | 1 |  |  |  | 1 |
|  | Ruptured stomach |  |  |  | 1 | 1 |  |  |  | 1 |
|  | Separation recti |  |  |  | 1 | 1 | 1 |  |  |  |
|  | Typhoid perforation |  |  | 1 |  | 1 | 1 |  |  |  |
|  | Urethral fistula |  |  | 1 |  | 1 | 1 |  |  |  |
| Talmas oneentopexy | Hypertrophic cirrhosis of liver |  |  | 1 |  | 1 |  | 1 |  |  |
| Trephine | Fractured skull | 1 |  | 6 |  | 7 | 2 | 4 |  | 1 |
| Transplantation bone | Bone cyst humerus |  |  | 1 |  | 1 | 1 |  |  |  |
| Total |  | 78 | 6 | 889 | 794 | 1,767 | 1,439 | 264 | 6 | 58 |

## *Obstetrical record.*

| Month. | White. Male. | White. Female. | Colored. Male. | Colored. Female. | Total. | Forceps. | Caesarian section. | Podalic version. | Lacerations. | Post partum hemorrhage. | Stillbirths. | Twins. | Head. | Breech. | Foot. | Primipara. | Multipara. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| July | 1 | 1 | 17 | 9 | 28 |  |  |  | 12 |  | 2 |  | 26 | 1 | 1 | 16 | 12 |
| August |  |  | 23 | 14 | 37 |  |  |  | 6 | 2 | 6 | 1 | 36 | 1 |  | 16 | 20 |
| September |  |  | 21 | 4 | 25 |  |  |  | 3 |  | 6 | 1 | 23 | 2 |  | 13 | 11 |
| October |  |  | 9 | 11 | 20 |  |  |  | 1 |  | 4 | 2 | 18 | 1 | 1 | 11 | 7 |
| November |  |  | 9 | 7 | 16 |  |  |  | 5 | 1 |  |  | 16 |  |  | 5 | 11 |
| December |  |  | 14 | 17 | 31 |  |  |  | 4 | 2 | 5 | 1 | 31 |  |  | 17 | 13 |
| January |  |  | 11 | 11 | 22 |  |  |  | 5 | 1 | 2 |  | 22 |  |  | 12 | 10 |
| February |  |  | 12 | 11 | 23 |  |  |  | 5 | 1 | 5 |  | 22 |  | 1 | 11 | 12 |
| March |  |  | 15 | 11 | 26 |  | 1 |  | 6 | 2 | 4 | 2 | 26 |  |  | 12 | 12 |
| April |  |  | 15 | 7 | 22 |  |  |  | 8 | 1 | 1 |  | 20 | 2 |  | 14 | 8 |
| May |  |  | 9 | 7 | 16 |  |  |  | 2 |  | 4 |  | 15 | 1 |  | 4 | 12 |
| June |  |  | 15 | 9 | 24 | 1 |  |  | 8 | 1 | 3 | 1 | 24 |  |  | 8 | 15 |
| Total | 1 | 1 | 170 | 118 | 290 | 1 | 1 |  | 65 | 11 | 42 | 8 | 279 | 8 | 3 | 139 | 143 |
| Living babies |  |  |  |  | 248 |  |  |  |  |  |  |  |  |  |  |  |  |

## *Medical and surgical diseases—out-patient department.*

| Diagnosis. | White. Male. | White. Female. | Colored. Male. | Colored. Female. | Total. |
|---|---|---|---|---|---|
| *Medical.* |  |  |  |  |  |
| Alcoholism |  |  | 2 |  | 2 |
| Asthma |  |  | 7 | 6 | 13 |
| Anemia |  |  | 5 | 5 | 13 |
| Angina pectoris |  |  |  | 4 | 4 |
| Aortic insufficiency |  |  | 3 |  | 3 |
| Aortic stenosis |  |  | 2 |  | 2 |
| Arterio sclerosis |  |  | 10 | 5 | 15 |
| Bronchitis: |  |  |  |  |  |
| Acute |  |  | 102 | 85 | 187 |
| Chronic |  |  | 48 | 33 | 81 |
| Cardiac hypertrophy |  |  | 3 | 1 | 4 |
| Chlorosis |  |  |  | 2 | 2 |
| Cholecystitis |  |  | 1 | 1 | 2 |
| Constipation |  |  | 44 | 42 | 86 |
| Coryza, acute |  |  | 33 | 21 | 54 |
| Cystitis |  |  | 2 | 5 | 7 |
| Debility |  |  | 14 | 13 | 27 |
| Debility, senile |  |  | 5 | 4 | 9 |
| Diabetes, mellitus |  |  |  | 4 | 4 |
| Diarrhea |  |  | 13 | 9 | 22 |
| Endocarditis |  |  | 6 | 3 | 9 |
| Enteritis |  |  |  | 1 |  |
| *Medical*—Continued. |  |  |  |  |  |
| Febricula |  |  | 1 | 1 | 2 |
| Gastralgia |  |  | 2 | 2 | 4 |
| Gastritis, chronic |  |  | 23 | 41 | 64 |
| Gastro-enteritis |  |  | 4 | 6 | 10 |
| Hemicrania |  |  | 1 |  | 1 |
| Hepatitis |  |  | 2 |  | 2 |
| Indigestion: |  |  |  |  |  |
| Gastric |  |  | 15 | 25 | 40 |
| Intestinal |  |  | 42 | 58 | 100 |
| Influenza |  |  | 8 | 8 | 16 |
| Lumbago |  |  | 15 | 4 | 19 |
| Malaria |  |  | 7 | 6 | 13 |
| Measles |  |  |  | 1 | 1 |
| Mitral regurgitation |  |  | 8 | 2 | 10 |
| Myalgia |  |  | 16 | 12 | 28 |
| Myocarditis |  |  | 5 | 2 | 7 |
| Nephritis: |  |  |  |  |  |
| Acute |  |  | 8 | 12 | 20 |
| Chronic |  |  | 8 | 6 | 14 |
| Phlebitis |  |  |  | 1 | 1 |
| Pharyngitis |  |  | 6 |  | 6 |
| Pleurodynia |  |  | 3 | 3 | 6 |

*Medical and surgical diseases—out-patient department*—Continued.

| Diagnosis. | White. | | Colored. | | Total. |
|---|---|---|---|---|---|
| | Male. | Female. | Male. | Female. | |
| *Medical*—Continued. | | | | | |
| Pneumonia: | | | | | |
| Lobar | | | 4 | 2 | 6 |
| Bronchial | | | 1 | 3 | 4 |
| Rheumatism: | | | | | |
| Acute articular | | | 10 | 14 | 24 |
| Muscular | | | 88 | 74 | 162 |
| Stomatitis | | | 2 | 1 | 3 |
| Tachycardia | | | | 2 | 2 |
| Tinea circinata | | | | 2 | 2 |
| Tuberculosis: | | | | | |
| Pulmonary | | | 14 | 13 | 27 |
| Typhoid | | | 3 | | 3 |
| Vertigo | | | 1 | | 1 |
| Whooping cough | | | 1 | | 1 |
| Undiagnosed | | | 63 | 44 | 107 |
| Total | | | 666 | 592 | 1,258 |
| Revisits | | | | | 1,058 |
| *Surgical.* | | | | | |
| Abscess: | | | | | |
| Head | | | 1 | | 1 |
| Jaw | | | 3 | 1 | 4 |
| Neck | | | 4 | | 4 |
| Arm | | | 3 | | 3 |
| Hand | | | 2 | 3 | 5 |
| Leg | | | 1 | 1 | 2 |
| Foot | | | 1 | 1 | 2 |
| Breast | | | 2 | 1 | 3 |
| Ischio rectal | | | 2 | 1 | 3 |
| Tubercular | | | 2 | | 2 |
| Adenitis: | | | | | |
| Cervical | | | 4 | 2 | 6 |
| Axillary | | | 1 | 1 | 2 |
| Inguinal | | | 10 | 1 | 11 |
| Femoral | | | 1 | 2 | 3 |
| Burns | | | 2 | | 2 |
| Bunion | | | | 1 | 1 |
| Bursitis | | | | 1 | 1 |
| Cellulitis | | | 4 | 2 | 6 |
| Clavis, infected | | | 2 | | 2 |
| Chancroids | | | 1 | 1 | 2 |
| Chondromata | | | 1 | | 1 |
| Cysts sebaceous | | | 5 | 1 | 6 |
| Dislocations: | | | | | |
| Sacroiliac | | | 1 | | 1 |
| Dog bite | | | 1 | | 1 |
| Fracture: | | | | | |
| Skull | | | 1 | | 1 |
| Jaw | | | 1 | | 1 |
| Wrist | 1 | | | 1 | 2 |
| Foreign bodies: | | | | | |
| Eye | | | 1 | | 1 |
| Finger | | | | 3 | 3 |
| Fibroma | | | 1 | | 1 |
| Fistula-in-ano | | | 2 | | 2 |
| Furuncle | | | 2 | | 2 |
| Ganglion | | | 2 | | 2 |
| Hemorrhoids | | | 3 | | 3 |
| Hernia: | | | | | |
| Umbilical | | | 1 | | 1 |
| Inguinal | | | 1 | 1 | 2 |
| Infections: | | | | | |
| Finger | 1 | 1 | 5 | 3 | 10 |
| Arm | | | 1 | | 1 |
| Foot | | | | 1 | 1 |
| Ingrowing nail | | 1 | 2 | 1 | 4 |
| Keloids | | | | 3 | 3 |
| Lipoma | | | | 5 | 5 |
| Onychia | | | 1 | 1 | 2 |
| Papilloma | | | | 1 | 1 |
| Phimosis | | | 24 | | 24 |
| Para phimosis | | | 2 | | 2 |
| Ranula | | | 1 | | 1 |
| Retention of urine | | | 1 | | 1 |

| Diagnosis. | White. | | Colored. | | Total. |
|---|---|---|---|---|---|
| | Male. | Female. | Male. | Female. | |
| *Surgical*—Continued. | | | | | |
| Sprains: | | | | | |
| Arm | | | 1 | 1 | 2 |
| Finger | | | 1 | 1 | 2 |
| Leg | | | | | |
| Wrist | | | 1 | 2 | 3 |
| Back | | | 1 | | |
| Knee | | | 2 | 1 | 1 |
| Synovitis | | | 4 | 1 | 5 |
| Tuberculosis of bone | | | 2 | | 2 |
| Ulcer | | | 1 | 3 | 4 |
| Varicocele | | | 1 | | 1 |
| Verucca | | | 2 | | 2 |
| Vaccinations | | | 75 | 93 | 168 |
| Wounds: | | | | | |
| Contused | 1 | | 1 | 1 | 3 |
| Incised | | | 3 | | 3 |
| Lacerated | | | 2 | | 2 |
| Total | 3 | 2 | 203 | 143 | 351 |
| Surgical dressings | | | | | 2,169 |
| *Gynecology.* | | | | | |
| Abortion | | 1 | | 1 | 2 |
| Amenorrhea | | | | 20 | 20 |
| Carcinoma of uterus | | | | 2 | 2 |
| Chancroid | | | | 8 | 8 |
| Cystic ovary | | | | 4 | 4 |
| Cervicitis | | | | 9 | 9 |
| Condylomata | | 1 | | 8 | 9 |
| Displacements of uterus: | | | | | |
| Prolapse | | | | 2 | 2 |
| Retroversion | | | | 26 | 26 |
| Dysmenorrhea | | | | 32 | 32 |
| Endometritis | | | | 15 | 15 |
| Fibroid of uterus | | | | 21 | 21 |
| Hyperemesis of pregnancy | | | | 1 | 1 |
| Leucorrhea | | | | 3 | 3 |
| Lacerations: | | | | | |
| Perineum | | | | 63 | 63 |
| Cervix | | | | 31 | 31 |
| Menopause | | | | 8 | 8 |
| Menorrhagia | | | | 11 | 11 |
| Metrorrhagia | | | | 7 | 7 |
| Ovaritis | | | | 14 | 14 |
| Pelvic abscess | | | | 1 | 1 |
| Post operative adhesions | | | | 14 | 14 |
| Pregnancy | | | | 59 | 59 |
| Pruritus of vulva | | | | 1 | 1 |
| Salpingitis | | | | 42 | 42 |
| Subinvolution of uterus | | | | 2 | 2 |
| Urethritis | | | | 19 | 19 |
| Vaginitis | | | | 34 | 34 |
| Vulvitis | | | | 2 | 2 |
| Venereal warts | | | | 2 | 2 |
| Urethral carbuncle | | | | 1 | 1 |
| Undiagnosed | | | | 17 | 17 |
| Total | | 2 | | 480 | 482 |
| Revisits | | | | | 371 |
| *Nervous diseases.* | | | | | |
| Anterior poliomyelitis | 1 | | 1 | | 2 |
| Alcoholism, chronic | 1 | | 1 | | 2 |
| Chorea | | | | 3 | 3 |
| Cerebral hemorrhage | | | 1 | 1 | 2 |
| Epilepsy | | | 10 | 7 | 17 |
| Hysteria | | | 3 | 5 | 8 |
| Neurasthenia | | 1 | 38 | 50 | 89 |
| Neuralgia | 1 | | 10 | 6 | 17 |
| Neuritis | | | 12 | 6 | 18 |
| Neuroses, occupation | | | 1 | 3 | 4 |
| Paralysis agitans | | | 1 | 1 | 2 |
| Paralysis, facial | | | 2 | 2 | 4 |

*Medical and surgical diseases—out-patient department*—Continued.

| Diagnosis. | White. | | Colored. | | Total. |
|---|---|---|---|---|---|
| | Male. | Female. | Male. | Female. | |
| *Nervous diseases*—Con. | | | | | |
| Sciatica | .... | .... | 4 | 2 | 6 |
| Syphilis, cerebral | .... | .... | 5 | .... | 5 |
| Syphilis, spinal | .... | .... | 2 | 1 | 3 |
| Tabes dorsalis | .... | .... | 2 | 1 | 3 |
| Undiagnosed | .... | .... | 3 | 4 | 7 |
| Total | 3 | .... | 196 | 92 | 192 |
| Revisits | .... | .... | .... | .... | 104 |
| *Eye.* | | | | | |
| Ambylopia | .... | .... | .... | 2 | 2 |
| Angio sclerosis | .... | .... | 1 | 3 | 4 |
| Astigmatism | .... | .... | 2 | 3 | 5 |
| Bell's palsy | .... | .... | .... | 2 | 2 |
| Blepharitis | .... | .... | 6 | 1 | 7 |
| Cataract | .... | .... | 1 | 11 | 12 |
| Chalazion | .... | .... | 16 | 17 | 33 |
| Choroiditis | .... | .... | 2 | .... | 2 |
| Corneal opacity | .... | .... | 4 | .... | 4 |
| Conjunctivitis | 2 | .... | 57 | 81 | 140 |
| Corneal ulcer | .... | .... | 6 | 7 | 13 |
| Dacryocystitis | .... | .... | 2 | 1 | 3 |
| Ectropion | .... | .... | .... | 1 | 1 |
| Foreign body in eye | 1 | .... | 3 | 3 | 7 |
| Glaucoma | .... | .... | 2 | 2 | 4 |
| Hordeoleum | .... | .... | 1 | 3 | 4 |
| Hypertrophic astigmatism | .... | .... | 2 | 3 | 5 |
| Iritis | 1 | .... | 10 | 10 | 21 |
| Keratitis | .... | .... | 14 | 15 | 29 |
| Optic atrophy | .... | .... | 8 | 2 | 10 |
| Ophthalmia neonatorum | .... | .... | .... | 1 | 1 |
| Optic neuritis | .... | .... | 2 | .... | 2 |
| Presbyopia | .... | .... | 2 | .... | 2 |
| Pterygium | .... | .... | 3 | 5 | 8 |
| Retinitis | .... | .... | 17 | 37 | 54 |
| Refractions | .... | .... | 39 | 87 | 126 |
| Strabismus | .... | .... | 2 | 3 | 5 |
| Traumatism of eye | .... | .... | 2 | 2 | 4 |
| Undiagnosed | .... | .... | 22 | 22 | 44 |
| Total | 4 | .... | 226 | 324 | 554 |
| Revisits | .... | .... | .... | .... | 260 |
| *Ear, nose, and throat.* | | | | | |
| Abscess: | | | | | |
| Ear | .... | .... | 2 | 2 | 4 |
| Peritonsillar | .... | .... | 8 | 2 | 10 |
| Submaxillary | .... | .... | .... | 1 | 1 |
| Adenoids | 1 | 1 | 37 | 30 | 69 |
| Eczema: | | | | | |
| Ear | .... | .... | 3 | 2 | 5 |
| Nares | .... | .... | 5 | 3 | 8 |
| Edema larynx | .... | .... | .... | 1 | 1 |
| Epistaxis | .... | .... | 3 | 1 | 4 |
| Foreign bodies, throat | .... | .... | 1 | 5 | 6 |
| Furunculosis, ear | .... | .... | 1 | .... | 1 |
| Impaction, cerumen | 1 | .... | 11 | 2 | 14 |
| Inflammation: | | | | | |
| Auditory meatus | .... | .... | 2 | .... | 2 |
| Eustachian tube | .... | .... | .... | 1 | 1 |
| Pharyngitis: | | | | | |
| Acute | .... | .... | 8 | 20 | 28 |
| Chronic | .... | .... | 21 | 30 | 51 |
| Specific | .... | .... | 3 | 6 | 9 |
| Polypi, nasal | .... | .... | 4 | 1 | 5 |
| Perforation, septum of nose | .... | .... | 5 | .... | 5 |
| Rhinitis: | | | | | |
| Acute | .... | .... | 6 | 2 | 8 |
| Atrophic | .... | .... | 7 | 6 | 13 |
| Hypertrophic | .... | .... | 7 | 1 | 8 |
| Chronic | .... | .... | 3 | 1 | 4 |

| Diagnosis. | White. | | Colored. | | Total. |
|---|---|---|---|---|---|
| | Male. | Female. | Male. | Female. | |
| *Ear, nose, and throat*—Continued. | | | | | |
| Tonsils, hypertrophy | 1 | .... | 29 | 33 | 63 |
| Tonsillitis: | | | | | |
| Acute | .... | .... | 14 | 16 | 30 |
| Follicular | .... | .... | 20 | 26 | 46 |
| Turbinate bones, hypertrophy of | .... | .... | 5 | 2 | 7 |
| Uvulitis | .... | .... | 10 | 6 | 16 |
| Laryngitis | .... | .... | 4 | 6 | 10 |
| Otitis media | .... | .... | 2 | 6 | 8 |
| Total | 3 | 1 | 221 | 212 | 437 |
| Revisits | .... | .... | .... | .... | 90 |
| *Genito-urinary.* | | | | | |
| Adenitis, inguinal | .... | .... | 61 | .... | 61 |
| Chancre | .... | .... | 23 | .... | 23 |
| Chancroid | .... | .... | 111 | .... | 111 |
| Cystitis | .... | .... | 6 | .... | 6 |
| Epidymitis | .... | .... | 45 | .... | 45 |
| Gonorrhea: | | | | | |
| Acute | .... | .... | 84 | .... | 84 |
| Chronic | .... | .... | 25 | .... | 25 |
| Hydrocele | .... | .... | 1 | .... | 1 |
| Herpes, glans penis | .... | .... | 2 | .... | 2 |
| Hematuria | .... | .... | 1 | .... | 1 |
| Impotence | .... | .... | 5 | .... | 5 |
| Phimosis | .... | .... | 51 | .... | 51 |
| Periurethral abscess | .... | .... | 2 | .... | 2 |
| Prostatitis | .... | .... | 22 | .... | 22 |
| Stricture of urethra | .... | .... | 26 | .... | 26 |
| Urethritis: | | | | | |
| Anterior | .... | .... | 114 | .... | 114 |
| Posterior | .... | .... | 90 | .... | 90 |
| Vesiculitis, seminal | .... | .... | 2 | .... | 2 |
| Venereal warts | .... | .... | 6 | .... | 6 |
| Varicocele | .... | .... | 5 | .... | 5 |
| Undiagnosed | .... | .... | 96 | .... | 96 |
| Total | .... | .... | 778 | .... | 778 |
| Revisits | .... | .... | .... | .... | 768 |
| *Pediatrics.* | | | | | |
| Auto-intoxication | .... | .... | .... | 1 | 1 |
| Acne | .... | .... | .... | 1 | 1 |
| Adenitis, cervical | .... | .... | 4 | 5 | 9 |
| Bronchitis: | | | | | |
| Acute | .... | .... | 28 | 38 | 66 |
| Chronic | .... | .... | 2 | .... | 2 |
| Capillary | .... | .... | 3 | 8 | 11 |
| Chicken pox | .... | .... | .... | 1 | 1 |
| Constipation | .... | .... | 2 | 7 | 9 |
| Croup, spasmodic | .... | .... | 1 | .... | 1 |
| Diarrhea | .... | .... | 3 | .... | 3 |
| Eczema | .... | .... | 11 | 8 | 19 |
| Enteritis | .... | .... | 5 | 5 | 10 |
| Furunculosis | .... | .... | .... | 1 | 1 |
| Gastro-enteritis | .... | .... | 2 | 9 | 11 |
| Hernia: | | | | | |
| Inguinal | .... | .... | 2 | .... | 2 |
| Umbilical | .... | .... | 1 | 4 | 5 |
| Ileo-colitis | .... | .... | 10 | 4 | 14 |
| Indigestion | .... | .... | 6 | 12 | 18 |
| Malnutrition | .... | .... | 6 | 9 | 15 |
| Malaria | .... | .... | .... | 1 | 1 |
| Marasmus | .... | 1 | .... | 2 | 3 |
| Mastoiditis | .... | .... | .... | 1 | 1 |
| Meningitis: | | | | | |
| Spinal | .... | .... | .... | 1 | 1 |
| Tubercular | .... | .... | .... | 1 | 1 |
| Nephritis, acute | .... | .... | 1 | .... | 1 |
| Ophthalmia neonatorum | .... | .... | 1 | .... | 1 |
| Paralysis: | | | | | |
| Facial | .... | .... | 1 | 1 | 2 |
| Acute infantile | .... | .... | 1 | 1 | 2 |

*Medical and surgical diseases—out-patient department*—Continued.

| Diagnosis. | White. | | Colored. | | Total. |
|---|---|---|---|---|---|
| | Male. | Female. | Male. | Female. | |
| *Pediatrics*—Continued. | | | | | |
| Pharyngitis | | 1 | | 1 | 2 |
| Phimosis | | | 4 | | 4 |
| Pneumonia, bronchial | | | 1 | 4 | 5 |
| Rachitis | | | 10 | 10 | 29 |
| Scabies | | | 1 | 2 | 3 |
| Stomatitis | | | 2 | | 2 |
| Syphilis, congenital | | | 2 | 3 | 5 |
| Tinea | | | 4 | 1 | 5 |
| Tonsillitis: | | | | | |
| Acute | 1 | 1 | 9 | 4 | 15 |
| Follicular | | | 2 | | 2 |
| Typhoid fever | | | 2 | | 2 |
| Umbilicus, infection of | | | | 1 | 1 |
| Urticaria | | | 3 | 2 | 5 |
| Vaginitis | | | | 1 | 1 |
| Whooping cough | 4 | 4 | 4 | 7 | 19 |
| Undiagnosed | 1 | | 19 | 21 | 41 |
| Total | 6 | 7 | 153 | 178 | 344 |
| Revisits | | | | | 118 |
| *Dermatology.* | | | | | |
| Alopecia Areata | | | 3 | 1 | 4 |
| Acne | | | 5 | 2 | 7 |
| Acne rosea | | | 1 | 1 | 2 |
| Acne vulgaris | | | 21 | 3 | 24 |
| Chloasma | | | | 2 | 2 |
| Dermatitis | | | 1 | 2 | 3 |
| Dermatitis venenata | | | 2 | 1 | 3 |
| Erythema | | | 2 | | 2 |
| Eczema: | | | | | |
| Papular | | | 2 | 2 | 4 |
| Pustular | | | 1 | 1 | 2 |
| Squamous | 2 | | 17 | 20 | 39 |
| Erythema, multiforma | | | | 2 | 2 |
| Herpes | | | 1 | 1 | 2 |
| Herpes zoster | | | 4 | 3 | 7 |
| Impetigo | | | 2 | 3 | 5 |
| Impetigo contagiosa | | | 4 | 3 | 7 |
| Infection: | | | | | |
| Face | | | 1 | | 1 |
| Finger | | | 1 | | 1 |
| Intertrigo | | | 1 | | 1 |
| Keloid | | | 1 | | 1 |
| Leucoplaia | | 1 | 1 | | 2 |
| Lichen planus | | | | 1 | 1 |
| Pediculi: | | | | | |
| Capitis | | | 1 | | 1 |
| Corporis | | | 1 | | 1 |
| Pityriasis | | | 6 | 6 | 12 |
| Palmar keratoses | | | 1 | 2 | 3 |

| Diagnosis. | White. | | Colored. | | Total. |
|---|---|---|---|---|---|
| | Male. | Female. | Male. | Female. | |
| *Dermatology*—Contd. | | | | | |
| Papilloma | | | 2 | 2 | 4 |
| Purpura simplex | | | 1 | 1 | 2 |
| Pruiritus | | | 2 | 1 | 3 |
| Psoriasis | | | 2 | | 2 |
| Scabies | 1 | | 23 | 12 | 36 |
| Seborrhea | | | | 3 | 3 |
| Syphilis: | | | | | |
| Secondary | 1 | | 25 | 30 | 56 |
| Tertiary | | | 6 | 8 | 14 |
| Sycosis | 1 | | 5 | | 6 |
| Tinea: | | | | | |
| Circinata | 1 | | 2 | 2 | 5 |
| Tonsurans | | | 8 | | 8 |
| Versicolor | | | 7 | | 7 |
| Ulcer, varicose | | | | 2 | 2 |
| Urticaria | | | 14 | 4 | 18 |
| Varicella | | | 2 | 2 | 4 |
| Varioloid | | | 1 | | 1 |
| Verucca | | | 2 | 2 | 4 |
| Total | 6 | 1 | 182 | 125 | 314 |
| Revisits | | | | | 142 |
| *Orthopedic.* | | | | | |
| Arthritis, hypertrophic | | | 3 | 1 | 4 |
| Fracture of ankle | | | 1 | 1 | 2 |
| Infections: | | | | | |
| Elbow joint | | | 1 | 1 | 2 |
| Lordosis | | | 1 | 1 | 2 |
| Periostitis, oscalcis | | | 1 | | 1 |
| Relaxed arch of foot | | | 3 | 3 | 6 |
| Relaxed sacro iliac joint | | | 1 | | 1 |
| Scoliosis | | | 1 | 1 | 2 |
| Sprains: | | | | | |
| Shoulder | | | 2 | | 2 |
| Elbow | | | 3 | | 3 |
| Ankle | | | 1 | 1 | 2 |
| Tuberculosis of hip | | | 1 | 1 | 2 |
| Undiagnosed | | | 6 | 3 | 9 |
| Total | | | 25 | 13 | 38 |
| Revisits | | | | | 163 |
| *Tuberculosis.* | | | | | |
| Positive cases | | | 26 | 22 | |
| Doubtful cases | | | 25 | 18 | |
| Total | | | 51 | 40 | 91 |
| Revisits | | | | | 374 |

*Emergency cases.*

| Diagnosis. | White. | | Colored. | | Total. |
|---|---|---|---|---|---|
| | Male. | Female. | Male. | Female. | |
| Abscess of leg | | | 3 | | 3 |
| Acute alcoholism | 4 | | 12 | 4 | 21 |
| Acute conjunctivitis | 1 | | 3 | | 4 |
| Acute gastritis | 1 | 2 | 9 | 7 | 19 |
| Acute retention urinæ | | | 15 | 1 | 16 |
| Bronchitis | | | 1 | | 1 |
| Burn: | | | | | |
| Arm | 1 | | 4 | 5 | 10 |
| Eye | | | 1 | | 1 |
| Face | | | 1 | 1 | 2 |
| Leg | | | 2 | 1 | 3 |

| Diagnosis. | White. | | Colored. | | Total. |
|---|---|---|---|---|---|
| | Male. | Female. | Male. | Female. | |
| Delusional insanity | 1 | 1 | | | 2 |
| Dislocation: | | | | | |
| Humerus | | | 3 | | 3 |
| Thumb | 1 | | 2 | 1 | 4 |
| Epididymitis | | | 1 | | 1 |
| Epilepsy | 2 | | 5 | 1 | 8 |
| Epistaxis | | | | 2 | 2 |
| Foreign bodies: | | | | | |
| Ear | | | 1 | 1 | 2 |
| Eye | 3 | | 7 | 2 | 12 |
| Foot | | | 4 | 2 | 6 |

## *Emergency cases*—Continued.

| Diagnosis. | White. |  | Colored. |  |  |
|---|---|---|---|---|---|
|  | Male. | Female. | Male. | Female. | Total. |
| Foreign bodies—Contd. |  |  |  |  |  |
| Hand | 2 |  | 5 | 8 | 15 |
| Nose |  | 1 |  | 1 | 2 |
| Throat |  |  | 5 | 2 | 7 |
| Vagina |  |  |  | 1 | 1 |
| Fracture: |  |  |  |  |  |
| Femur |  |  | 1 |  | 1 |
| Fibula |  |  | 1 |  | 1 |
| Finger |  |  | 1 |  | 1 |
| Frontal bone |  |  | 1 |  | 1 |
| Inferior maxilla |  |  |  | 1 | 1 |
| Nasal bone | 1 |  | 1 |  | 2 |
| Radius |  |  | 3 | 1 | 4 |
| Ribs | 1 |  | 1 | 2 | 4 |
| Tibia |  |  | 1 |  | 1 |
| Ulna |  |  | 2 | 3 | 5 |
| Furuncle | 2 |  | 14 | 5 | 21 |
| Gas poisoning |  |  | 2 |  | 2 |
| Heat exhaustion | 1 |  | 1 |  | 2 |
| Hemorrhage |  |  | 2 | 1 | 3 |
| Hysteria |  |  |  | 2 | 2 |
| Impacted cerumen |  |  | 1 |  | 1 |
| Infected foot |  | 1 | 12 | 1 | 14 |
| Infected hand | 4 | 1 | 38 | 24 | 67 |
| Ingrown toe nail |  |  | 1 | 2 | 3 |
| Inguinal hernia | 1 |  | 1 |  | 2 |
| Insect and dog bite | 4 | 1 | 5 | 4 | 14 |
| Pes planus |  |  | 1 |  | 1 |
| Phimosis |  |  | 2 |  | 2 |
| Prolapse rectum |  |  | 3 |  | 3 |
| Sebaceous cysts |  |  | 2 |  | 2 |
| Shock | 3 |  | 7 | 1 | 11 |
| Sprain: |  |  |  |  |  |
| Ankle | 1 |  | 17 | 1 | 19 |
| Back |  |  | 9 | 1 | 10 |
| Elbow |  |  | 5 | 3 | 8 |
| Hip |  |  | 3 |  | 3 |
| Sprain—Continued. |  |  |  |  |  |
| Knee |  |  | 9 | 1 | 10 |
| Wrist | 1 |  | 18 | 2 | 21 |
| Traumatic pleurisy |  |  |  | 1 | 1 |
| Urethral fistula |  |  |  | 1 | 1 |
| Verruca | 1 |  | 1 | 1 | 3 |
| Wounds: |  |  |  |  |  |
| Contused— |  |  |  |  |  |
| Body | 3 |  | 10 | 2 | 15 |
| Face | 1 |  | 12 | 5 | 18 |
| Foot | 4 |  | 15 | 3 | 22 |
| Hand | 6 | 2 | 16 | 5 | 29 |
| Scalp | 1 |  | 6 | 1 | 8 |
| Gunshot— |  |  |  |  |  |
| Elbow |  |  | 1 |  | 1 |
| Forearm |  |  | 1 |  | 1 |
| Leg |  |  | 1 |  | 1 |
| Thigh |  |  | 1 |  | 1 |
| Incised— |  |  |  |  |  |
| Body |  |  | 7 | 1 | 8 |
| Face | 1 |  | 22 | 5 | 28 |
| Foot |  |  | 6 | 2 | 8 |
| Hand | 4 | 2 | 34 | 7 | 47 |
| Scalp | 1 |  | 14 | 2 | 17 |
| Lacerated— |  |  |  |  |  |
| Body | 1 |  | 7 | 2 | 10 |
| Face | 19 | 2 | 87 | 19 | 127 |
| Foot | 2 |  | 15 | 2 | 19 |
| Hand | 14 |  | 70 | 15 | 99 |
| Scalp | 16 |  | 48 | 10 | 74 |
| Punctured— |  |  |  |  |  |
| Body |  |  | 4 |  | 4 |
| Face |  |  | 5 | 1 | 6 |
| Foot | 1 | 1 | 17 | 8 | 27 |
| Hand |  |  | 14 | 7 | 21 |
| Total | 110 | 14 | 664 | 195 | 983 |

## *Occupation of patients.*

| Occupation. | White. |  | Colored. |  |
|---|---|---|---|---|
|  | Male. | Female. | Male. | Female. |
| Baker | 1 |  |  |  |
| Barber |  |  | 13 |  |
| Bellman |  |  | 2 |  |
| Blacksmith | 1 |  | 11 |  |
| Bootblack |  |  | 2 |  |
| Brickmaker | 1 |  |  |  |
| Butcher | 2 |  |  |  |
| Butler |  |  | 13 |  |
| Carpenter | 4 |  | 6 |  |
| Carpet layer |  |  | 1 |  |
| Chambermaid |  |  |  | 39 |
| Chauffeur | 1 |  | 2 |  |
| Clerk | 2 | 1 | 14 | 3 |
| Coachman | 1 |  | 4 |  |
| Cook |  |  | 5 | 41 |
| Dishwasher |  |  | 2 |  |
| Domestic |  | 1 |  | 1,006 |
| Dressmaker |  | 1 |  | 16 |
| Driver |  |  | 9 |  |
| Electrician | 2 |  |  |  |
| Engineer | 1 |  | 2 |  |
| Expressman |  |  | 3 |  |
| Farmer | 1 |  | 30 |  |
| Florist | 1 |  |  |  |
| Footman |  |  | 2 |  |
| Gardener | 1 |  | 1 |  |
| Hostler |  |  | 16 |  |
| Housekeeper |  | 1 |  | 54 |
| Huckster |  |  | 26 |  |
| Janitor |  |  | 2 |  |
| Laborer | 27 |  | 636 |  |
| Laundress |  |  |  | 66 |
| Lawyer | 1 |  | 2 |  |
| Milkman |  |  | 1 |  |
| Miner |  |  | 7 |  |
| Minister |  |  | 6 |  |
| Messenger | 2 |  | 5 |  |
| Musician | 1 |  | 2 |  |
| Newsboy |  |  | 2 |  |
| No occupation | 5 | 2 | 59 | 62 |
| Nurse |  |  |  | 14 |
| Painter | 2 |  | 1 |  |
| Physician | 1 |  | 3 |  |
| Porter |  |  | 16 |  |
| Printer | 1 |  |  |  |
| Sailor | 1 |  | 2 |  |
| Seamstress |  | 1 |  | 27 |
| Soldier | 5 |  | 1 |  |
| Stenographer | 1 |  | 1 |  |
| Student |  |  | 31 | 29 |
| Tailor | 1 |  | 4 |  |
| Teacher |  | 1 | 3 | 19 |
| Unknown | 7 | 1 | 51 | 26 |
| Waiter |  |  | 12 | 1 |
| Watchman |  |  | 3 |  |
| Total | 74 | 9 | 1,014 | 1,403 |

## *Nativity of patients.*

| | White. | | Colored. | |
|---|---|---|---|---|
| | Male. | Female. | Male. | Female. |
| Alabama | | | 4 | 2 |
| Arkansas | | | 1 | |
| Connecticut | | 1 | | 2 |
| District of Columbia | 17 | 3 | 455 | 701 |
| Florida | | | 1 | 1 |
| Georgia | | | 8 | 5 |
| Illinois | 1 | | 3 | |
| Indiana | | | | 1 |
| Kansas | | | 1 | |
| Kentucky | | | 3 | 4 |
| Louisiana | 1 | | 2 | |
| Maryland | 3 | | 142 | 192 |
| Massachusetts | 1 | 2 | 2 | 3 |
| Michigan | | | 1 | |
| Minnesota | | | 1 | 1 |
| Mississippi | | | 4 | 5 |
| Missouri | 1 | | 2 | 1 |
| New Hampshire | 1 | | | |
| New Jersey | 1 | 1 | 5 | 6 |
| New York | 3 | 1 | 15 | 11 |
| North Carolina | 1 | | 24 | 19 |
| Ohio | 3 | | 7 | 5 |
| Pennsylvania | 1 | 1 | 9 | 15 |
| Rhode Island | 1 | | | |
| South Carolina | | | 3 | 12 |
| Tennessee | | | 4 | 9 |
| Texas | | | 2 | 3 |
| Unknown | 7 | | 12 | 9 |
| Virginia | 2 | | 287 | 361 |
| West Virginia | 1 | | 9 | 24 |
| Africa | | | 1 | |
| British Guiana | | | 2 | |
| British West Indies | | | 1 | |
| Canada | 1 | | | 1 |
| Cuba | | | 1 | |
| France | 2 | | | |
| Germany | 12 | | | |
| Greece | 1 | | | |
| Ireland | 9 | | | |
| Italy | 4 | | | |
| Mexico | | | 1 | |
| Porto Rico | | | 1 | |
| Total | 74 | 9 | 1,014 | 1,403 |

## *Anæsthetics.*

| | White. | | Colored. | | |
|---|---|---|---|---|---|
| | Male. | Female. | Male. | Female. | Total. |
| Ether | 5 | | 238 | 445 | 688 |
| Chloroform | 1 | | 6 | 5 | 12 |
| Ether and chloroform | 2 | | 5 | 1 | 8 |
| H. M. S. and ether | | | 10 | 7 | 17 |
| H. M. S. and chloroform | 1 | | | | 1 |
| Somniform | 2 | 1 | 3 | 4 | 10 |
| Somniform and ether | | | | 3 | 3 |
| Cocaine | 1 | | 50 | 8 | 59 |
| Ethyl chloride | | 1 | 3 | | 4 |
| Quinine | | | 4 | 1 | 5 |
| Carbolic acid | | | 2 | | 2 |
| Sterile water | | | 1 | | 1 |
| Total | 12 | 2 | 322 | 474 | 810 |

## *Pathological Department.*

| | |
|---|---|
| White-blood counts | 231 |
| Red-blood counts | 37 |
| Hæmaglobin estimates | 105 |
| Widal reactions | 99 |
| Noguchi reactions | 11 |
| Blood cultures | 16 |
| Malarial examinations | 10 |
| Differential counts | 6 |
| Urinalysis | 2,094 |
| Post mortems | 33 |
| Examination of surgical specimens | 65 |
| Examination of sputum | 147 |
| Museum specimens | 53 |
| X-ray photographs | 236 |
| Sections cut, stained, and mounted | 502 |
| Total | 3,645 |

## *Patients admitted each year for the past 37 years.*

| Year ending June 30: | |
|---|---|
| 1875 | 190 |
| 1876 | 319 |
| 1877 | 500 |
| 1878 | 519 |
| 1879 | 642 |
| 1880 | 819 |
| 1881 | 892 |
| 1882 | 1,102 |
| 1883 | 1,373 |
| 1884 | 1,509 |
| 1885 | 1,794 |
| 1886 | 1,923 |
| 1887 | 2,017 |
| 1888 | 1,997 |
| 1889 | 2,074 |
| 1890 | 2,392 |
| 1891 | 2,373 |
| 1892 | 2,331 |
| 1893 | 2,422 |
| 1894 | 2,801 |
| 1895 | 2,476 |
| 1896 | 2,596 |
| 1897 | 2,815 |
| 1898 | 2,355 |
| 1899 | 2,374 |
| 1900 | 2,427 |
| 1901 | 2,414 |
| 1902 | 2,408 |
| 1903 | 2,677 |
| 1904 | 2,907 |
| 1905 | 2,918 |
| 1906 | 2,207 |
| 1907 | 2,366 |
| 1908 | 2,669 |
| 1909 | 2,590 |
| 1910 | 2,740 |
| 1911 | 2,900 |

### *Summary.*

| | 1911 | | | | | 1910 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | White. | | Colored. | | Total. | White. | | Colored. | | Total. |
| | Male. | Female. | Male. | Female. | | Male. | Female. | Male. | Female. | |
| In hospital July 1, 1909 | ...... | ...... | ...... | ...... | ...... | 9 | 1 | 49 | 70 | 129 |
| In hospital July 1, 1910 | 2 | 3 | 70 | 79 | 154 | ...... | ...... | ...... | ...... | ...... |
| Admitted | 73 | 9 | 1,019 | 1,397 | 2,498 | 91 | 13 | 1,020 | 1,368 | 2,492 |
| Births | 1 | 1 | 145 | 101 | 248 | ...... | 3 | 137 | 108 | 248 |
| Total under care | 76 | 13 | 1,234 | 1,577 | 2,900 | 100 | 17 | 1,206 | 1,546 | 2,869 |
| Stillbirths | ...... | ...... | 25 | 17 | 42 | ...... | ...... | ...... | ...... | ...... |
| Died | 3 | ...... | 117 | 114 | 234 | 1 | 3 | 125 | 108 | 237 |
| Discharged: | | | | | | | | | | |
| Recovered | ...... | ...... | ...... | ...... | 1,416 | ...... | ...... | ...... | ...... | 1,128 |
| Improved | ...... | ...... | ...... | ...... | 919 | ...... | ...... | ...... | ...... | 1,109 |
| Unimproved | ...... | ...... | ...... | ...... | 138 | ...... | ...... | ...... | ...... | 236 |
| Not treated | ...... | ...... | ...... | ...... | 17 | ...... | ...... | ...... | ...... | 5 |
| Total died and discharged | ...... | ...... | ...... | ...... | 2,724 | ...... | ...... | ...... | ...... | 2,715 |
| In hospital July 1, 1911: | | | | | | | | | | |
| United States | 3 | ...... | 33 | 40 | 76 | ...... | ...... | ...... | ...... | 67 |
| District of Columbia | ...... | ...... | 42 | 58 | 100 | ...... | ...... | ...... | ...... | 87 |
| Operations | 78 | 6 | 889 | 794 | 1,767 | 74 | 3 | 804 | 601 | 1,482 |
| Results of operations: | | | | | | | | | | |
| Recovered | ...... | ...... | ...... | ...... | 1,439 | ...... | ...... | ...... | ...... | 583 |
| Improved | ...... | ...... | ...... | ...... | 264 | ...... | ...... | ...... | ...... | 852 |
| Unimproved | ...... | ...... | ...... | ...... | 6 | ...... | ...... | ...... | ...... | 5 |
| Died | ...... | ...... | ...... | ...... | 58 | ...... | ...... | ...... | ...... | 42 |
| Emergencies | 110 | 14 | 664 | 195 | 983 | 121 | 10 | 538 | 189 | 858 |
| Days maintenance: | | | | | | | | | | |
| United States patients | ...... | ...... | ...... | ...... | 22,196 | ...... | ...... | ...... | ...... | 19,792 |
| District of Columbia patients | ...... | ...... | ...... | ...... | 35,855 | ...... | ...... | ...... | ...... | 39,623 |
| Officers and employees | ...... | ...... | ...... | ...... | 31,205 | ...... | ...... | ...... | ...... | ...... |
| Total days maintenance | ...... | ...... | ...... | ...... | 89,256 | ...... | ...... | ...... | ...... | 59,415 |
| Cost of patients and employees per day, based on gross expense | ...... | ...... | ...... | ...... | $0.88 | ...... | ...... | ...... | ...... | ...... |
| Largest number of patients at any one time | ...... | ...... | ...... | ...... | 192 | ...... | ...... | ...... | ...... | 191 |
| Smallest number of patients at any one time | ...... | ...... | ...... | ...... | 142 | ...... | ...... | ...... | ...... | 134 |
| Daily average number of patients | ...... | ...... | ...... | ...... | 168.1 | ...... | ...... | ...... | ...... | 161.9 |
| District of Columbia patients admitted, including births | ...... | ...... | ...... | ...... | 1,882 | ...... | ...... | ...... | ...... | 1,931 |
| United States patients admitted, including births | ...... | ...... | ...... | ...... | 1,018 | ...... | ...... | ...... | ...... | 561 |
| Treated in out-patient department: | | | | | | | | | | |
| Medical | ...... | ...... | 666 | 592 | 1,258 | 13 | ...... | 659 | 716 | 1,388 |
| Surgical | 3 | 2 | 203 | 143 | 351 | 3 | 3 | 325 | 162 | 493 |
| Gynecological | ...... | 2 | ...... | 480 | 482 | ...... | ...... | ...... | 319 | 319 |
| Nervous | 3 | 1 | 96 | 92 | 192 | 1 | ...... | 76 | 68 | 145 |
| Eye | 4 | ...... | 226 | 324 | 554 | 5 | 3 | 166 | 212 | 386 |
| Ear, nose, and throat | 3 | 1 | 221 | 212 | 437 | 2 | 2 | 208 | 181 | 393 |
| Genito-urinary | ...... | ...... | 778 | ...... | 778 | 1 | ...... | 221 | 17 | 239 |
| Pediatrics | 6 | 7 | 153 | 178 | 344 | ...... | ...... | 38 | 32 | 70 |
| Dermatology | 6 | 1 | 182 | 125 | 314 | 1 | ...... | 2 | ...... | 3 |
| Orthopedic | ...... | ...... | 25 | 13 | 38 | ...... | ...... | ...... | ...... | ...... |
| Tuberculosis | ...... | ...... | 51 | 40 | 91 | ...... | ...... | 22 | 24 | 46 |
| Total | 25 | 14 | 2,601 | 2,199 | 4,839 | 26 | 8 | 1,717 | 1,731 | 4,647 |
| Revisits | ...... | ...... | ...... | ...... | 5,637 | ...... | ...... | ...... | ...... | ...... |
| Prescriptions compounded: | | | | | | | | | | |
| Indoor | ...... | ...... | ...... | ...... | 19,483 | ...... | ...... | ...... | ...... | ...... |
| Outdoor | ...... | ...... | ...... | ...... | 12,712 | ...... | ...... | ...... | ...... | ...... |
| Total | ...... | ...... | ...... | ...... | 32,195 | ...... | ...... | ...... | ...... | ...... |

*Board of Charities account from July 1, 1905, to June 30, 1911.*

| Fiscal year ended— | Adults. | Children. | Babies. | Total. | Bills rendered. | Payment received. | Balance due. |
|---|---|---|---|---|---|---|---|
| 1906 | 1,675 | 96 | 165 | 1,936 | $38,223.75 | $25,500 | $12,723.75 |
| 1907 | 1,809 | 119 | 167 | 2,095 | 36,184.80 | 25,500 | 10,684.80 |
| 1908 | 1,661 | 119 | 184 | 1,964 | 34,470.55 | 25,500 | 8,970.55 |
| 1909 | 1,566 | 89 | 181 | 1,836 | 38,846.40 | 25,500 | 13,346.40 |
| 1910 | 1,719 | 127 | 176 | 2,018 | 41,640.85 | 25,500 | 16,140.85 |
| 1911 | 1,584 | 139 | 159 | 1,882 | 37,139.36 | 25,500 | 11,639.36 |
| Total | 10,014 | 689 | 1,032 | 11,731 | 226,505.71 | 153,000 | 73,505.71 |

*Statement of the appropriation for salaries required by the sundry civil act approved June 25, 1909 (35 Stats., 992).*

| | |
|---|---|
| Surgeon in chief | $3,000 |
| Resident assistant surgeon | 1,500 |
| Resident physician | 1,200 |
| Clerk | 1,400 |
| Assistant clerks (2) | 600<br>540 |
| Pharmacist | 720 |
| Resident assistant pharmacist | 120 |
| Pathologist | 2,000 |
| Resident anaesthetist | 1,200 |
| Resident superintendent of nurses | 1,080 |
| Resident assistant superintendent of nurses | 540 |
| Resident night supervisor of nurses | 480 |
| Resident head nurses (2), $480 each | 960 |
| Steamstress | 300 |
| Engineer | 1,200 |
| Assistant engineer | 900 |
| Fireman (3), $720 each | 2,160 |
| Resident pupil nurses (39), $60 each | 2,340 |
| Maids (3), $168 each | 504 |
| Resident orderlies (2), $300 each | 600 |
| Resident orderlies (4), $240 each | 960 |
| Steward | 720 |
| Cook, head | 540 |
| Cook, second | 360 |
| Cook, third | 288 |
| Waiters (3), $144 each | 432 |
| Resident driver | 360 |
| Driver | 360 |
| Laundryman | 420 |
| Laundresses (5), $144 each | 720 |
| Resident watchman (2), $200 each | 400 |
| Laborer | 216 |
| Laborers (2), $180 each | 360 |
| Total | 29,480 |

*Comparative statement of receipts and expenditures.*

| | 1911 | | 1910 | |
|---|---|---|---|---|
| RECEIPTS. | | | | |
| Appropriation, sundry civil bill: | | | | |
| For support | $21,000.00 | | $15,000.00 | |
| Salaries | 29,500.00 | | 28,500.00 | |
| Appropriation, District of Columbia—appropriation bill (under contract with Board of Charities) | 25,500.00 | | 25,500.00 | |
| By transfer from Howard University, account fuel | 2,893.50 | | | |
| | | $78,893.50 | | $69,000.00 |
| EXPENDITURES. | | | | |
| Miscellaneous (fuel, light, clothing, forage, medicines, etc.) | 28,289.65 | | 21,100.73 | |
| Subsistence | 20,932.40 | | 18,450.96 | |
| Salaries | 29,335.72 | | 27,956.13 | |
| | | 78,577.77 | | 67,507.82 |

*Comparative statement of miscellaneous expenditures.*

| | 1911 | 1910 |
|---|---|---|
| Drugs | $2,439.19 | $1,782.05 |
| Equipment: | | |
| Books | 26.40 | 15.00 |
| Electric supplies | 156.14 | 149.71 |
| Kitchen | 55.85 | |
| Power plant | 156.23 | 71.99 |
| Plumber's tools | 12.72 | |
| Stable | 252.68 | |
| Medical and surgical | 1,336.73 | 630.49 |
| X ray | 115.50 | 116.06 |
| Forage | 344.51 | 385.66 |
| Fuel: | | |
| Coal | 7,432.30 | 4,113.65 |
| Wood | 71.30 | 84.75 |
| Furniture and furnishing | 698.25 | |
| Heat, light, and power: | | |
| Current— | | |
| Light | 1,660.23 | 2,121.24 |
| Power | 1,590.44 | 1,954.08 |
| Gas | 503.78 | 440.55 |
| Materials: | | |
| Dry goods | 960.37 | 1,988.82 |
| Hardware | 54.89 | |
| Materials—Continued. | | |
| Lumber | $97.10 | $63.43 |
| Plumber's material | 30.23 | 356.50 |
| Paints | 49.12 | 132.95 |
| Repairs: | | |
| General | 1,445.21 | 700.28 |
| Power plant | 69.96 | 166.85 |
| Kitchen | 83.15 | |
| Stable service | 102.01 | 70.13 |
| Stationery | 578.73 | 521.31 |
| Structures | 341.50 | |
| Telephone | 294.32 | 321.33 |
| Supplies: | | |
| Hospital | 1,251.49 | 1,328.82 |
| Household | 1,469.22 | |
| Laboratory | 247.44 | 174.50 |
| Laundry | 639.79 | 731.85 |
| Mechanics | 220.06 | |
| Medical | 887.23 | 2,509.66 |
| Surgical | 2,368.16 | |
| Wearing apparel | 188.81 | |
| Unclassified | 58.61 | 111.95 |
| Total | 28,289.65 | 21,100.73 |

*Comparative statement of subsistence expenditures.*

| | 1911 | 1910 |
|---|---|---|
| Provisions: | | |
| Beverages— | | |
| Coffee | $279.24 | $217.14 |
| Sherry wine | 24.75 | |
| Tea | 109.27 | 27.25 |
| Canned goods | 1,225.68 | 958.89 |
| Condiments, flavors, and pickles | 179.52 | |
| Dairy products— | | |
| Butter | 1,853.19 | 1,681.10 |
| Cheese | 39.32 | 27.24 |
| Milk, fresh | 2,162.79 | 2,026.57 |
| Dried fruits | 195.03 | 1,781.13 |
| Cereal food products— | | |
| Bread | 1,494.36 | 1,425.28 |
| Breakfast food | 582.10 | |
| Corn meal | 30.69 | 24.48 |
| Crackers | 237.32 | 247.47 |
| Flour | 292.50 | 227.50 |
| Eggs | 927.88 | 1,026.15 |
| Fish— | | |
| Fresh | 498.15 | 533.42 |
| Salt | 136.40 | |
| Clams | 38.40 | 45.60 |
| Provisions—Continued. | | |
| Fish—Continued. | | |
| Oysters | $163.80 | $163.60 |
| Fowl— | | |
| Chicken | 1,772.78 | 1,711.07 |
| Turkey | 80.00 | |
| Fruits and vegetables | 1,764.43 | 1,840.69 |
| Meat— | | |
| Beef | 1,617.60 | 1,206.56 |
| Ham and shoulder, smoked | 1,577.56 | 935.84 |
| Liver | 78.63 | 73.44 |
| Mutton | 969.93 | 1,040.38 |
| Pork | 139.02 | |
| Sausage— | | |
| Green | 60.08 | 121.80 |
| Smoked | 78.08 | |
| Veal | 98.52 | |
| Sugar | 954.52 | |
| Sundries | 265.17 | 313.11 |
| Ice | 1,005.69 | 795.00 |
| Total | 20,932.40 | 18,450.96 |

## NEEDS.

An institution of the magnitude of this can not be satisfactorily managed unless properly manned and equipped; nor is it in the interest of efficiency and economy to provide low-grade workmen. Your attention is therefore especially invited to the following needs, and it is urged that such steps as are necessary be taken to secure favorable congressional action therewith.

First is the need of a small building devoted exclusively to the pathological work of the hospital. This can be provided at a cost of $25,000.

The rapid growth of this institution renders the services of the following additional employees imperative:

| | |
|---|---|
| Stores keeper | $1,400 |
| Engineer | 1,000 |
| 2 firemen, $720 | 1,440 |
| Assistant anæsthetist | 1,000 |
| Director of clinics | 720 |
| Laundryman | 300 |
| Cook | 360 |
| 10 pupil nurses, $60 | 600 |
| 2 telephone operators, $380 | 760 |
| 3 laborers, $300 | 900 |
| 2 maids, $300 | 600 |
| Seamstress | 300 |
| Dishwasher | 260 |
| Ambulance driver | 360 |

If some arrangement can be had whereby employees of the department can be detailed to the hospital, estimates for the engineer and firemen may be eliminated.

An electric ambulance, at a cost of $3,500, to replace the one drawn by horse, should be provided. One of this kind would give greater satisfaction and could be maintained and operated as economically as the present one.

The installation of an ice plant is urged, and $4,000 would cover this need. It is estimated that such a plant would pay for itself in three years.

An ash conveyer is needed to complete the remodeling of the central heating plant. The appropriation of last year for this purpose was not sufficient, and therefore $3,000 is asked.

My recommendation of last year as regards a fence, inclosing the hospital grounds, is renewed. Not only should the grounds be inclosed, but beautified as well, and in such a manner as to adorn the "city beautiful."

There is a growing demand for some provision for pay patients, and my recommendation of last year, touching this matter, is hereby renewed. The Board of Charities of the District of Columbia in discussing this matter in their report of 1910 used the following language, which explains the situation fully:

> The Secretary of the Interior, under whose jurisdiction Freedmen's Hospital is conducted, recommends that the hospital be authorized to admit pay patients, and in this recommendation the board concurs. The interest of the board of charities in the matter arises from the fact that this board has a contract with the hospital under which indigent patients are admitted for treatment at the cost of the District of Columbia. Frequently colored persons who are not indigent apply to the board for admission to Freedmen's Hospital. They state that they desire treatment at that particular hospital, that they desire to be cared for by colored physicians and colored nurses, and that no other institution in the city provides such opportunity. Of course this board must deny such applications, because we are authorized to provide for indigent persons only. At the same time we recognize some force in the plea of these colored persons for treatment by nurses and doctors of their own race, for which treatment they are willing to pay. As there is no other hospital in the District of Columbia administered by colored physicians and nurses, it appears to the board that it would be proper for Freedmen's Hospital to admit pay patients. It is customary for public hospitals to admit some private pay patients.

As stated in my report of last year, a new wing to the hospital is the only means by which this class of patients can be satisfactorily cared for, and it will require an appropriation of $60,000 to cover the cost of construction.

## TRAINING SCHOOL FOR NURSES.

The school of nursing has completed its seventeenth year of work and is represented by 217 graduates. These women are engaged successfully in private nursing, and not a few are engaged in institutional work in various parts of the country.

The graduating exercises were held in the Andrew Rankin Memorial Chapel May 19, 1911, at which time 13 nurses received their diplomas.

It is gratifying to state that the health of the nurses, notwithstanding their crowded quarters, has been generally good, thus permitting the usual routine of classes, lectures, and hospital work to be pursued without interruption.

### *Applications, resignations, dismissals, etc.*

| | | | |
|---|---|---|---|
| Applications received | 108 | Rejected after probation | 3 |
| Applicants taken on probation | 33 | Resigned | 5 |
| Accepted | 17 | | |

### *Graduates of 1911.*

Clara E. Blackburn, West Virginia.
Eva Virginia Clay, Pennsylvania.
Edna May Coates, District of Columbia.
Emily Estella Green, Virginia.
Sara Elizabeth Grisby, District of Columbia.
Florence M. Harris, New York.
Jennie C. Hopkins, North Carolina.
Bessie Boyd Patton, Tennessee.
Ida J. Piper, Massachusetts.
Mae Irene Price, Massachusetts.
Nettie Bentley Stevens, Georgia.
Lulu Eainestine Thompson, District of Columbia.
Martella M. York, Illinois.

The course of lectures was delivered by the following staff:

| | |
|---|---|
| Gynecology | W. A. Warfield, M. D. |
| Anatomy and physiology | S. L. Carson, M. D. |
| Hygiene | C. A. Brooks, M. D. |
| Theoretical nursing | Laura R. MacHale. |
| Dietetics, practical and theoretical nursing | Emma M. Irwin. |
| Diseases of the eye | M. O. Dumas, M. D. |
| Medical nursing | Caryl Burbank, M. D. |
| Diseases of children | John R. Francis, M. D. |
| Operative surgery | H. H. Kerr, M. D. |
| Obstetrics | E. D. Williston, M. D. |
| Materia medica and therapeutics | John W. Mitchell, M. D. |
| Urinalysis and bacteriology | W. Van Swearingen, M. D. |
| Neurology | J. C. Tappan, M. D. |
| Ear, nose, and throat | J. J. Richardson, M. D. |

## COURSE OF INSTRUCTION.

### FIRST YEAR.

Anatomy—Six lectures, one hour each.
Physiology—Eight lectures, one hour each.
Hygiene—Four lectures, one hour each.
Bandaging—Two lectures, one hour each.
Practical and theoretical nursing—One lecture a week, one hour each, from October 1 to May 1.

### SECOND YEAR.

Materia medica—Six lectures, one hour each.
Bacteriology and urinalysis—Five lectures, one hour each.
Medical nursing, including the acute infectious diseases—Five lectures, one hour each.

Surgical nursing, including anæsthetics—Eight lectures, one hour each.
Dietetics—Ten lectures, one hour each.
Practical and theoretical nursing—One lecture a week, one hour each, from October 1 to May 1.

### THIRD YEAR.

Obstetrics—Six lectures, one hour each.
Children's diseases, including the feeding of infants—Four lectures, one hour each.
Diseases of the eye—Three lectures, one hour each.
Diseases of the ear, nose, and throat—Four lectures, one hour each.
Gynecology—Six lectures, one hour each.
Nervous diseases—Four lectures, one hour each.
Practical and theoretical nursing—One lecture a week, one hour each, from October 1 to May 1.

## *First-year practical demonstrations.*

[Each lesson one and one-half hours long.]

### OCTOBER.

First lesson—Bed making; management of helpless patients—moving, changing giving baths.
Second lesson—Note taking; pulse, temperature, respiration, mental condition.
Third lesson—The temperature; the thermometer, its use and care; excretions; eruptions.
Fourth lesson—Pulse; quality, rhythm, number, etc.; hypodermic syringe, its care and use.

### NOVEMBER.

Fifth lesson—Fomentations; poultices; sand bags; ice cap, its care; ice coil.
Sixth lesson—The hot-water bag or bottle, use and abuse; care of instruments, sterilizing, etc.; care of rubber gloves, methods of sterilizing.
Seventh lesson—Administering of enemata, douches, cantharides, etc.; Murphy infusion.
Eighth lesson—Counter irritations, mustard, cantharides, etc.; physiological action; dry cupping.
Ninth lesson—Hypodermoclysis; intra-venous or infusion; preparation of solution; patient, instruments.

### DECEMBER.

Tenth lesson—Positions: Dorsal, Sims, Trendelenberg, Fowler's, knee and chest; lithotomy.
Eleventh lesson—Prevention and treatment of bed sores.
Twelfth lesson—Weights and measures, solutions.
Thirteenth lesson—Disinfection of clothing, excreta, sputum, etc.

### JANUARY.

Fourteenth lesson—Bandaging, making and use; material, Esmark.
Fifteenth lesson—Care of patient before, during, and after anæthesia.
Sixteenth lesson—Care of patient before, during, and after operation, and preparation of patient for operation.
Seventeenth lesson—Preparation of room for operation, sterilization, etc.

### FEBRUARY.

Eighteenth lesson—Urine analysis, specific gravity, quantity reaction, Fehling's and Heller's tests.
Nineteenth lesson—Contagious-disease nursing, care of convalescents, feeding in particular.
Twentieth lesson—Infant feeding, sterilization, pasteurizing, child's first bath, care of eyes, buttocks, etc.
Twenty-first lesson—Administration of drugs, use and effect.

### MARCH.

Twenty-second lesson—Care of the dead.
Twenty-third lesson—Fumigation.

### *Course in cooking.*

#### LESSON I.

Barley water.
Toast water.
Albuminized milk.
Rice water.
Flaxseed lemonade.
Orangeade.
Oatmeal water.
Lemonade.
Koumiss.

#### LESSON II.

Eggnog.
Boiled coffee.
Wine whey.
Tea.
French coffee.
Coco.

#### LESSON III.

Broiled beef tea.
Arrowroot gruel.
Barley gruel.
Bottled beef tea.
Farina gruel.
Indian gruel.
Flour gruel.
Cracker gruel.
Hominy.

#### LESSON IV.

Dry toast.
Bread and butter sandwiches.
Boiled eggs.
Dropped egg on toast.
Water toast.
Raw-beef sandwiches.
Souffled egg.
Milk toast.
Scrambled egg.

#### LESSON V.

Foamy omelet.
Eggs in butter.
Soft custard.
White custard.
Bread omelet.
Eggs a la goldenrod.
Junket custard.
Baked apples.
French omelet.
Baked custard.

#### LESSON VI.

Raw oysters.
Boiled oysters.
Clam stew.
Fancy roast.
Oyster roast.
Riced potatoes.
Oyster stew.
Clam water.
Mashed potatoes.

#### LESSON VII.

Broiled fish.
Potatoes au gratin.
Creamed sweetbreads.
Broiled potatoes.
White sauce.
Broiled sweetbreads.
Creamed potatoes.
Boiled rice.

#### LESSON VIII.

Mutton broth.
Broiled steak.
Broiled bone birds.
Cream soup.
Chicken broth.
Broiled chops.
Baked potatoes.
Steamed rice.
Crisp crackers.
Tomato.

#### LESSON IX.

Lemon jelly.
Irish moss blanc mange.
Snow pudding.
Lemon ice.
Orange jelly.
Rice pudding.
Tapioca cream.
Pineapple ice.
Wine jelly.

#### LESSON X.

Orange ice.
Lemon sherbet.
Vanilla ice cream.
Chocolate ice cream.

*Three-year schedule.*

SURGICAL EXPERIENCE.

| Ward. | Day duty. | Night duty. |
|---|---|---|
| | *Months.* | *Months.* |
| Genito-urinary | 3 | 1 |
| Female surgical | 3 | 1 |
| Male surgical | 3 | 1 |
| Gynecological | 3 | 1 |
| Obstetrical | 3 | 1 |
| Emergency operating room | 3 | 1 |
| Main operating room | 3 | ........... |
| Total | 21 | 6 |

MEDICAL EXPERIENCE.

| | | |
|---|---|---|
| Male medical | 3 | 1 |
| Female medical | 3 | 1 |
| Diet kitchen | 1 | ........... |
| Total | 7 | 2 |
| Grand total (2⅓ months each year) | 28 | 8 |

The surgical experience includes four months' gynecological and four months' obstetrical.
The medical experience includes two months in the children's ward.

## OCCUPATION AND RESIDENCE OF GRADUATES.

1896.

Ashton, Luci V., private nurse, Kansas City, Mo.
Blackburn, N. L., private nurse, Philadelphia, Pa.
Burke, Julia (Mrs. Phillips), Jacksonville, Fla.
Fleetwood, Sara I., deceased.
Foust, Isabella L., private nurse, Winston, N. C.
Gibson, Katherine C., Bureau of Engraving and Printing, Washington, D. C.
Green, Anna N., deceased.
Owens, Laura A., private nurse, Washington, D. C.
Pierce, Letitia (Mrs. Blair), Washington, D. C.
Ricks, Antoinette M. (Mrs. Demby), Kansas City, Mo.
Robinson, Annie B., superintendent and matron, Good Samaritan Hospital, Charlotte, N. C.
Shorter, Sarah A., private nurse, Washington, D. C.
Simms, Annie A. (Mrs. Johnson), Baltimore, Md.
Smith, Gertrude (Mrs. Thorn), Washington, D. C.
Tyler, Elizabeth, private nurse, Northampton, Mass.

1897.

Caldwell, Amanda J. (Mrs. Darrell), Dallas, Tex.
Combs, Annie, massage specialist, Washington, D. C.
Green, Lucille (Mrs. Tibbs), St. Paul, Minn.
Griffin, G. Josephine, private nurse, Washington, D. C.
Haithcock, Ada, private nurse, Washington, D. C.
King, Annie C. (Mrs. Hughes), Richmond, Va.
Rollins, Willie M. (Mrs. Frazier), Washington, D. C.
Smith, S. May, private nurse, Troy, N. Y.
Thomas, Annie M., private nurse, Washington, D. C.
Thompson, Della R. (Mrs. Davis), Vienna, Va.
Underhill, Katherine P. (Mrs. Wm. Moten), Washington, D. C.
Webb, Eva, private nurse, Washington, D. C.
Warner, Florence A., private nurse, Springfield, Mass.
Young, Lola E. M., private nurse, Greenville, S. C.

1898.

Bannister, Carrie J., private nurse, Washington, D. C.
Bennett, Florence R., private nurse, Baltimore, Md.
Cabannis, Martha E., night supervisor, Freedmen's Hospital, Washington, D. C.
Carter, Edith M., private nurse, New Rochelle, N. Y.
Davis, Annie M., private nurse, Shelbyville, Tenn.
Ennis, Sarah J. (Mrs. Brooks), Washington, D. C.

Gaines, Mary R., private nurse, Oakland, Cal.
Geder, Isabella, private nurse, Binghamton, N. Y.
Hurlong, Mary A., private nurse, Asheville, N. C.
King, Carrie M. (Mrs. Foreman), Washington, D. C.
Robinson, Amelia A., private nurse, Nashville, Tenn.
Russell, Ruby E., private nurse, Charlottesville, Va.
Stanton, Priscilla (Mrs. Todd), Pittsburgh, Pa.
Sumby, Lillie May, private nurse, Washington, D. C.
Valentine, J. Ella, private nurse, Lebanon, Ind.
Whitson, Clara E. (Mrs. Howe), Washington, D. C.

### 1899.

Banks, Effie P. (Mrs. Sykes), Indianapolis, Ind.
Brown, Agnes M., private nurse, Meyersdale, Pa.
Coleman, Georgia A., private nurse, Washington, D. C.
Dismond, S. Matthew (Mrs. Dibble), St. Louis, Mo.
Francis, Bertha A., head nurse, Home Hospital, Birmingham, Ala.
Hairston, Lula C (Mrs. Crews), Winston, N. C.
Hankins, Mintha C., private nurse, Washington, D. C.
Hendricks, Eliza R. (Mrs. Brown).
Henry, Lillian M., private nurse, Downington, Pa.
Hoge, Carrie M., private nurse, Washington, D. C.
Keemer, Jessie E. (Mrs. Robinson), Providence, R. I.
McEwen, Irene O. (Mrs. Green), Pensacola, Fla.
Rich, Anna, private nurse, Hartford, Conn.
Scott, Helen V. (Mrs. Cole), Swansboro, Ga.
Thompson, Isabella, private nurse, New Orleans, La.
Wilson, Emma C., private nurse, Montgomery, Ala.
Williams, Elmira E., deceased.

### 1900.

Clarke, Mary F., private nurse, Richmond, Va.
Hamilton, Priscilla, deceased.
Hawkins, Nannie E., private nurse, Charlotte, N. C.
Hunton, Mary A. (Mrs. Gordon), St. Louis, Mo.
Johnson, Hattie B., private nurse, Mount Pleasant, N. C.
Lewis, Eva P., private nurse, Manassas, Va.
Mickens, Marcella C., private nurse, Pittsburgh, Pa.
Middleton, Haga H., private nurse, Charleston, S. C.
Moody, Annie L., private nurse, Washington, D. C.
Smith, Cora V., private nurse, Camden, N. J.
Winfield, Laura, private nurse, Ware, Mass.

### 1901.

Allen, Margaret A., private nurse, Washington, D. C.
Barks, Susan C., private nurse, Washington, D. C.
Campbell, B. N., private nurse, Montgomery, Ala.
Dey, Mary L., private nurse, Philadelphia, Pa.
Hackley, Mamie E. (Mrs. Ash), Philadelphia, Pa.
Hanson, Carrie L., private nurse, Baltimore, Md.
Harrell, Catherine S. (Mrs. Butler), Texas.
Hunter, Bessie, private nurse, Washington, D. C.
Jackson, Eliza A., private nurse, Richmond, Va.
Jones, Mary J., private nurse, Washington, D. C.
Powell, Gussie D., private nurse, Richmond, Va.
Rhone, Charlotte S., private nurse, Newbern, N. C.
Robinson, Frances A., private nurse, Newbern, N. C.
Thomas, Bertha J., head nurse, Freedmen's Hospital, Washington, D. C.
Walcott, Louisa M., private nurse, Rockhill, S. C.
Whitley, Florence A., private nurse, Newbern, N. C.

### 1902.

Adams, Ella C., private nurse, Philadelphia, Pa.
Baker, Vera L., head nurse, State Hospital, Goldsboro, N. C.
Booth, Mary S., private nurse, head nurse, Holly's sanitorium, Hinton, W. Va.
Delisse, Augusta V., private nurse, Brooklyn, N. Y.
Dias, Frances C., private nurse, Philadelphia, Pa.
Johnson, Gertrude B., private nurse, Niagara Falls, N. Y.
Mason, Corinna (Mrs. Phillips), Springfield, Mass.
Nichols, Florence L. (Mrs. Avant), Charlott, N. C.
Rogers, Amanda, private nurse, Indianapolis, Ind.
Roper, Maggie A., private nurse, Galveston, Tex.
Thompson, Rachel A. (Mrs. Thomas), deceased.

### 1903.

Browne, E. M., head nurse, Douglass Hospital, Philadelphia, Pa.
Baltimore, Mary E., private nurse, Harrisburg, Pa.
Christie, Sarah E., private nurse, Chester, Pa.
Coates, Maiella E., private nurse, Washington, D. C.
Hargrave, L. S., private nurse, Trenton, N. J.
Johnson, L. D., private nurse, Warrenton, N. C.
Johnson, Nellie V., private nurse, Abbeville, S. C.
Latney, Carrie L. (Mrs. Bowie), Washington, D. C.
Love, Ellen V., private nurse, Lumberton, N. C.
Purcell, E. J., private nurse, Brunswick, Ga.
Rollins, Clara A., private nurse, Washington, D. C.
Rutherford, Anna L., private nurse, Kingston, N. C.
Sharp, Carrie M. (Mrs. Morgan), Petersburg, Va.
Valentine, J. L. (Mrs. Dial), Jacksonville, Fla.
Yarborough, S. V. S., private nurse, Columbus, Ga.

### 1904.

Baker, Hattie E., private nurse, Darlington, S. C.
Blackwell, W. Lucille (Mrs. Morris), New York, N. Y.
Carter, Mary E., private nurse, Rippon, W. Va.
Carter, Elizabeth V., head nurse, Mercy Hospital, Philadelphia, Pa.
Grant, Anna E., private nurse, Savannah, Ga.
Gilmore, Mary E., private nurse, Leavenworth, Kans.
James, Aleathia D. (Mrs. Franklin), Jacksonville, Fla.
Jeffries, Emma M., private nurse, Redbank, N. J.
Jones, Violet, private nurse, Hartford, Conn.
Lewis, Louzetta (Mrs. Mitchell), Montgomery, Ala.
Richardson, Effie V. (Mrs. McCoy), Washington, D. C.
Thomas, Marie E. (Mrs. Jones), Topeka, Kans.

### 1905.

Braxton, Margaret, private nurse, Hartford, Conn.
Brooks, Alpha E. (Mrs. Jones), Fairmont Heights, D. C.
Carter, Marion M., private nurse, Washington, D. C.
Henderson, Hattie E., private nurse, Cleveland, Ohio.
Holmes, Julia E., private nurse, Plainfield, N. J.
Jefferson, Roxanna M., private nurse, Bristol, Tenn.
Kidd, Bertha M. (Mrs. Harris), Washington, D. C.
Long, Ida E., private nurse, Newark, N. J.
Maston, Mary J., head nurse, Red Cross Sanitarium, Louisville, Ky.
Scott, Julia E., private nurse, New Haven, Conn.
Teabout, Stella, private nurse, Richfield Springs, N. Y.
Taliaferro, Olivia, private nurse, Anacostia, D. C.
Terry, Jessie C., private nurse, Los Angeles, Cal.
Williams, Daisy M. (Mrs. Moten), Sherman, Tex.
Williams, Mary T., private nurse, Ware Neck, Va.
Wilson, Annabel, private nurse, Baltimore, Md.

### 1906.

Barnes, Annie, private nurse, Baltimore, Md.
Bearce, Daisy M., private nurse, Rye, N. Y.
Burress, Mary E. (Mrs. Wormley), Ardwick, S. C.
Gordon, Mary B., private nurse, Washington, D. C.
Hall, Iona M., private nurse, Troy, Ohio.
Henderson, Sara O., private nurse, Newport, R. I.
Johnson, Harriett C., private nurse, Cleveland, Ohio.
Lewis, Willie A., private nurse, Atlanta, Ga.
Lucas, Marion V., head nurse, Freedmen's Hospital, Washington, D. C.
McDougal, Colota M., private nurse, Indianapolis, Ind.
McKnight, Viola, superintendent of nurses, Mercy Hospital, Philadelphia, Pa.
Marshall, Mary E., private nurse, Morristown, Tenn.
Merritt, Mary E., superintendent of nurses, Mitchell Hospital, Leavenworth, Kans.

### 1907.

Bullock, Blanche V., private nurse, Richmond, Va.
Childs, Helen D., private nurse, Philadelphia, Pa.
Escoffery, Lula M., private nurse, Atlantic City, N. J.
Harmon, Nannie M., private nurse, Tip Top, Va.

Porter, Susan H., dean woman's department, Tuskegee, Ala.
Payton, Lillian M., private nurse, Washington, D. C.
Peck, Alice M., private nurse, Baltimore, Md.
Rose, Julia M., private nurse, Lynchburg, Va.
Slocum, Mary E., private nurse, Providence, R. I.
Smith, Minnie M., private nurse, Amherst, Mass.
Taylor, Loretta P., private nurse, Washington, D. C.
Wright, Nena J., private nurse, Washington, D. C.

### 1908.

Briggs, Cornelia K., private nurse, Troy, N. Y.
Denning, Clara S., private nurse, Canajoharie, N. Y.
Douglass, Kate E., private nurse, New Bedford, Mass.
Donaldson, Vesta L., private nurse, Ocean Grove, N. J.
Fray, Julia, private nurse, Washington, D. C.
Henderson, Jamima S., private nurse, Spring Lake, N. J.
Jones, Bertie L., private nurse, Harrisburg, Pa.
Nicholas, Beatrice E., private nurse, Baltimore, Md.
Proctor, Eva M., private nurse, Newark, N. J.
Robinson, Alice E., private nurse, Hartsville, S. C.
Reynolds, Agnes, private nurse, Ironton, Ohio.

### 1909.

Allen, Irene P. (Mrs. Martin), deceased.
Burnett, Sarah L., private nurse, Washington, D. C.
Coates, Nana E., Battle Creek, Mich.
Curtis, Minnie M., private nurse, Marietta, Ohio.
Green, Lillian C., private nurse, Washington, D. C.
Hall, Anita B., private nurse, Baltimore, Md.
Hankle, Areatha B. (Mrs. Bailey), St. Louis, Mo.
Johnson, Lillian A., private nurse, Poughkeepsie, N. Y.
Lewis, Charlotte M., private nurse, Atlanta, Ga.
Parker, Mary E., private nurse, Williamsport, Pa.
Sheppard, Emma D., private nurse, Meyersdale, Pa.
Smith, Annie M., private nurse, Jacksonville, Fla.
Spears, Lillian, private nurse, Providence, R. I.
Wainwright, Melinda E., Charles Town, W. Va.

### 1910.

Amby, Grace, married, Baltimore, Md.
Brown, Nellie V., private nurse, Meyersdale, Pa.
Everett, Sankey B., private nurse, Goldsboro, N. C.
Gates, Eugene J. P., private n Washington, D. C.
Gilliam, Octavia T., private nurse, Hanover, Va.
Hutchinson, Mabel M., private nurse, Lockport, N. Y.
Jackson, Sara E., private nurse, Steelton, Pa.
Jordan, Maggie M., private nurse, Washington, D. C.
McClaine, Nettie L., private nurse, Paducah, Ky.
Richardson, Lizzette S., private nurse, Atlanta, Ga.
Reid, Marion M., private nurse, Washington, D. C.

Very respectfully,

W. A. WARFIELD,
*Surgeon in Chief.*

The SECRETARY OF THE INTERIOR.

# REPORT OF THE PRESIDENT OF HOWARD UNIVERSITY.

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The School of Theology: ISAAC CLARK, A. M., D. D., *Dean.*[1]
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The Academy: GEORGE J. CUMMINGS, A. M., *Dean.*
The School of Manual Arts and Applied Sciences: PERRY B. PERKINS, A. M., Ph. D., *Acting Director.*

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[1] Sustained entirely by endowments and special gifts. No doctrinal tests required.

# REPORT OF THE PRESIDENT OF HOWARD UNIVERSITY.

HOWARD UNIVERSITY,
*Washington, D. C., July 15, 1911.*

SIR: I have the honor to submit for Howard University the following report, showing the condition of the institution on the 1st day of July, 1911, embracing therein the number of pupils received and discharged or leaving the same for any cause during the year and the number remaining; also the branches of knowledge and industry taught and the progress made therein.

The enrollment for the past year has been 1,382. The international character of the institution may be judged from the fact that these students come from 37 States and 11 foreign countries—from British West Indies, 83; British Guiana, 7; Cuba, 6; Porto Rico, 5; Africa, 3; South America, 3; and from Dutch West Indies, Bermuda, Liberia, and Republic of Panama, 1 each. After the successful completion of the courses laid down in the catalogue, 200 students were graduated as per statement under each department, of these 129 receiving degrees as follows: M. D., 28; D. D. S., 17; Phar. D., 8; LL. B., 28; B. D., 6; A. B., 37; Ped. B., 5.

The strategic importance of Howard University is emphasized by the fact that this is the only institution for the education of the American Negro in any way under the supervision and partial support of the Government. Only at Howard University is there provision, with the same broad equipment and high standards, both for the higher and professional training of the colored people. All the State institutions of the South, supported by general taxation for the higher education, are closed to them. They are practically shut out from participation in the educational advantages made available at great cost at West Point and Annapolis.

Yet teachers in the common and high schools must meet the requirements of the State school authorities. To practice medicine the colored man is required to pass the same examination before the State boards as the white physician. So also in other professions and pursuits provision must be made for these 10,000,000 of our citizens, else it will mean the blind leading the blind, and both falling into the ditch, at great cost to society and the State. While the appropriation for Indian schools last year, available at most for about one quarter of a million of people, aggregated $1,430,000, the total Government appropriation looking to the training and equipment of a race of 10,000,000, on whom have been placed the duties and responsibilities of citizenship, was only about $100,000.

## RESOURCES.

It is becoming increasingly evident that the institution must depend for the years to come almost entirely on Government support and current receipts from tuition in the several departments. The

President of the United States, in his recent notable address, has, for the first time in the history of the university, laid the institution upon the Government as a definite obligation, stating in strong terms that—

> This institution here is the partial repayment of a debt—only partial—to a race to which the Government and the people of the United States are eternally indebted. * * * We are free from any embarrassment with respect to carrying out the obligation, and it is fitting that the Government of the United States should assume the obligation of the establishment and maintenance of a first-class university for the education of colored men. * * *
>
> Everything that I can do as an Executive in the way of helping along this university I expect to do. I expect to do it because I believe it is a debt of the people of the United States, it is an obligation of the Government of the United States, and it is money constitutionally applied to that which shall work out in the end the solution of one of the great problems that God has put upon the people of the United States.

The year has been signalized by the announcement of a bequest from Mrs. Moir, of New York City, that will probably amount to about $25,000. This is a hopeful indication, as this is the first bequest of any considerable amount that has been received in many years. Dr. John L. Ewell, professor in the school of theology for 25 years, showed his abiding interest in the university by a bequest of $1,000 for the special use of the school of theology.

Little may be expected in the way of gifts for endowment to an institution that since its foundation has been so closely affiliated with the Government, in view of the fact that the scores of academies and colleges in the South for the academic and higher training of the colored people are so largely dependent on the generosity of benevolent people and on the efforts of the colored race.

## SCHOLASTIC WORK.

The marked advance in the quality of work now done by the several faculties has been favorably commented upon. It is not too much to say that the advance to the high level of requirements and instruction now maintained marks an era in the history of the university. Both in the academic and professional departments the standards of entrance have been raised and are strictly enforced. After careful scrutiny, the entrance requirements and the scholastic work in the school of liberal arts have received the commendation of the secretary of the Carnegie Foundation for the Advancement of Teaching. Instead of the rather free system of electives which has obtained for some years, the return to required group courses with a more limited system of electives, especially in the freshman and sophomore years, is yielding excellent results. The students are to be highly commended for their earnestness, serious purpose, and devotion to the work in hand.

## EVALUATION OF SCHOLASTIC WORK.

In his annual report for 1909 the president called attention to the need, in a growing university such as this, for careful supervision and unification of the entire academic work in order to secure modern methods, uniformity of standards, and the most effective use of the teaching force. The dean of a department is necessarily circumscribed by the demands of his own department. The tendency is to narrow his vision to its demands.

It is also evident that the time and energy of the president in a modern university must be largely absorbed in the increase of equipment and endowments, the general supervision and growth of the plant, and the representation of the institution before the public.

For these reasons the president suggested the value that might come through the presence of an able and experienced educator, a man of modern equipment and high educational ideals, who should make an assessment of educational values in the scholastic work of the institution. And all this with a view to giving well-matured suggestions as to the coordination of the work, the proper balancing of various courses, and the best utilization of all the forces in the several faculties.

Report has been made as to the high commendation of this plan by President Pritchett, of the Carnegie Foundation, and other educators. This year, in carrying out this plan, the cooperation of of Dr. Elmer E. Brown, United States Commissioner of Education, has been secured and some work has already been done through an educational expert. It is believed that when his work is completed he will be able to give suggestions of great value, thus adding to the efficiency of the work through the best utilization of the teaching force.

## THE STUDENT BODY.

The registration for the year shows a total of 1,382 students in the several departments, as follows:

| | |
|---|---|
| College of arts and sciences | 216 |
| Teachers' college | 129 |
| School of theology | 123 |
| School of medicine | 365 |
| School of law | 118 |
| Academy | 361 |
| Commercial college | 113 |
| Students in music | 88 |
| Manual arts and domestic science | 159 |
| Total | 1,672 |
| Names duplicated because of students taking special courses in different departments | 290 |
| Correct total | 1,382 |

This great student body, gathered from 37 States, with 111 from 11 foreign countries, has maintained standards of conduct and devotion to work that are worthy of high praise.

There have been few cases of serious discipline. The fact that 1,179 young men have been pursuing work in the several departments of the university during the past year, for only 190 of whom there has been dormitory space provided on the campus, and that they are thus thrown out into the heart of a great city, and that there has been but one arrest in the past five years, furnishes a tribute to the serious purpose and high-minded character of the student body that is unusual.

Over five-sixths of the young men wholly or in part earn their own way, practically all of them being self-dependent. This contributes to their earnest purpose and serious devotion to duty. Under the supervision of a single janitor the numerous buildings of the university are entirely cared for by student labor. The amount of direct aid is less than $1.25 per student. Students not only pay for their own board and books, but also for their rooms, and an incidental fee for current expenses. This throwing of the student body upon their own support is developing a spirit of self-reliance and self-respect that will make them fitting examples to the people among whom they shall go forth as teachers, physicians, and civic, moral, and industrial leaders.

## EQUIPMENT AND ENLARGED LABORATORY WORK IN THE SCIENCES.

The opening of Science Hall for regular work last September, and the notable occasion of its dedication on December 13, marked a new era in the expanding life of the university. The occasion was signalized by the presence of distinguished educators and men of science, and the addresses were by educators of world-wide fame.

Dr. Henry S. Pritchett, president of the Carnegie Foundation for the Advancement of Teaching, said:

> The occasion is one of significance for the reason that this is the most complete modern building ever prepared for the instruction of the Negro race in the sciences which have been the inspiration of the world in the last half century, and whose application will in the next half century afford the greatest stepping-stones for progress which any race can find.

Dr. William H. Welch, of Johns Hopkins University, president of the American Association of Medical Colleges, said:

> I know enough of the work and of the purpose and of the hopes of Howard University to feel that here is an exceptional institution, serving a most useful and exceptional purpose in the life of the Nation, and with the greatest promise of future usefulness. I confess, also, that my interest has been aroused by the words of commendation in that very interesting report from the Carnegie Foundation, of the character and work of the medical department of this university. I think I am not wrong in saying that that was, to a very considerable extent, a revelation to those interested in medical education. This university is indeed to be heartily congratulated on the extension of its usefulness through this new foundation, the opening of your Science Hall. President Pritchett has already indicated in what broad ways the larger opportunities for study and investigation in the branches of science here, representing the natural and physical sciences—biology, chemistry, physics—in what broad ways these opportunities would contribute to the advancement of liberal training. It is indeed true that science contributes to the formation of character, that it makes better men. It contributes to the search and appreciation of truth. It is therefore as much a part of a liberal training to-day as the study of the so-called humanities. You stand to-day among the relatively few medical colleges which demand a thorough training, a college training in these sciences, before the student is eligible for the study of medicine. This would hardly have been, I think, a justifiable demand without the provision of such a new Science Hall as is now available—the first which is available in any large way, I believe, to the members of your race.

Dr. Booker T. Washington, principal of Tuskegee Institute, said:

> I congratulate Howard University in behalf of my fellow members of the board of trustees for the generosity of our Government in providing this magnificent and beautiful hall of science, and I congratulate our Government on its wisdom and generosity in using the opportunity to provide this fine building for the scientific education of my race. This is a tremendous step forward in our education. It is not enough to get scientific knowledge, but equally important to see that the scientific knowledge be applied to the life of the race. With this great scientific equipment, Howard University is for the first time in the history of this country placed in a position to be the mother and the guide in connection with this great work. Through the work that Howard University is doing in this new Science Hall, we are saying to all the men who follow us and suffer for us, that their faith in us has not been misplaced.

The Science Hall is well equipped for efficient work in the several departments of physics, chemistry, and biology. The eager response of the student body to the new facilities offered is seen in the fact that more than 600 students are regularly instructed in these several branches, with practical laboratory work offered in each department of study. Instead of one professor and one instructor who gave their entire time to the sciences, the work now requires three professors, one assistant professor, three regular instructors, and seven student assistants giving their time to the work of scientific instruction.

It has been often said that while colored students were proficient in the languages, history, etc., they showed no adaptation to the exact sciences. But the eager response of this great body of colored students to the opportunities here for the first time offered in any large way for advanced laboratory work in the exact sciences, marks an era in the educational life of the Negro race. The possible application of the practical instruction here received must have an important bearing on the future welfare of the race.

## MANUAL ARTS AND THE APPLIED SCIENCES.

The new Hall of Manual Arts and Applied Sciences is now completed. Spaulding Hall, which is 80 feet in length and three stories high, had been found wholly inadequate to meet the requirements of enlarging work in this department of instruction. The new building is of brick with reinforced concrete floors, is 100 by 40 feet, and three stories high. The basement is occupied by the university printing press and engineering laboratories; the second floor by the department of woodworking; the third floor is given up to two large lecture rooms, domestic arts department, and a drafting room. This will give an opportunity for much-needed extension of the domestic science department, which will occupy the entire third floor of Spaulding Hall, the basement of which will be used for engineering laboratories, forge shop, laundry, storage, etc.

This hall, with the facilities now made available, will enable the institution to meet the increasing demand for the skilled mechanic and engineer through the courses of study authorized in civil, mechanical, and electrical engineering, leading to the degrees of C. E., M. E., and E. E., respectively. The outline of courses includes plain surveying, highway and railroad location, engines and boilers, hydraulics, roof and bridge engineering, masonry and reenforced concrete construction, architectural design, etc. During the first two years emphasis is laid upon those courses which will give the student the necessary mathematical equipment; during the junior and senior years particular prominence is given to the more technical courses, with especial emphasis placed on machine and architectural design and laboratory work.

The colored people are making rapid progress in the acquirement of land, building of towns, and the establishment of manufacturing plants. A body of skilled and capable mechanics and engineers is essential to the equipment of a race for growth and permanent success.

## HEATING, ELECTRIC LIGHTING, AND POWER PLANT.

The present administration found the buildings on the main campus inadequately heated by six or seven small steam outfits that were worn out and inadequate. This was true also of the plant of the school of medicine. The latter was replaced by new boilers and an appropriation was secured for an addition to the heating plant of the Freedmen's Hospital that in the fall of 1908 gave ample heat to all the buildings.

The rapid expansion of the institution in the building of the Science Hall and Manual Arts Building has now rendered this plant inadequate. Through the cooperation of the Secretary of the Interior an appropriation was secured for the building of an enlarged addition to the heating plant, including equipment for electric lighting and power.

The plant will give adequate heat, light, and power at the minimum of expense, making a large annual saving in electric lighting and power alone.

## SALARIES.

Attention is especially directed to the action of the executive committee, looking to the enlarged appropriations for the increase of salaries, especially in the school of liberal arts. While the salaries now paid are equal to those available in many institutions of like character, yet the increased expense of living in Washington and the example set by the District in paying more liberal salaries to heads of departments in the public schools doing similar work, enforce the arguments for an increase in salaries, to be paid as soon as the appropriation can be made available.

## NEEDS.

*Dormitory for young men.*—An estimate of $100,000 for a new dormitory for young men was included in the original estimates which had the approval of the President and the Secretary of the Interior, but the exigencies of the situation and the cutting down of appropriations for proposed buildings and improvements in other departments under the Secretary of the Interior seemed to require that this proposed appropriation be eliminated, which was done.

There has been no increase in dormitory accommodations since the original buildings were erected, over 40 years ago. Of the nearly fifteen hundred students in attendance, four-fifths of whom are men, only one in five can be accommodated in present dormitories. It is unfortunate that the young men who are in training as the intellectual, moral, religious, and industrial leaders of their race are thus forced out into the miscellaneous lodging places of the city, and are not kept under the direct supervision, control, and uplifting influence of the dormitory life of the institution.

*Assembly hall.*—One of the pressing needs of the institution is an assembly hall large enough to at least seat the student body. The only assembly hall of the university, with fifteen hundred students, is the Rankin Memorial Chapel, which was built especially for religious services, and seats only 600. The increase in collegiate and academic and industrial students so crowded the chapel last year that a large body of students could not be seated, interfering with the best discipline and order. On special occasions there is no assembly hall for seating the people, although Howard University is becoming more and more a center for the broader education of an entire race in educational, civic, and moral life. A plain and commodious assembly hall can be built in the natural amphitheater on the west side of the campus at moderate cost. The board of trustees regard these proposed buildings as indispensable.

## SCHOOL OF AGRICULTURE.

Permit me again to emphasize the vital importance of practical instruction in the science of agriculture. It is unfortunate that the cutting down of appropriations several years ago led to the enforced dropping of regular instruction in agriculture. With a view to the possible opening of such a department, the lot north of Clark Hall has now been secured, which gives to the university a half block, in addition to space on the adjoining campus, for practical instruction in agriculture. The need of such a department is emphasized by the following facts:

Nearly 85 per cent of the colored people are engaged in agricultural pursuits. Coming out from slavery, where initiative and intelligence in agricultural work could be little cultivated, the marvel is that the Negro farmer has made even such progress as he has. If he could have had systematic supervision and intelligent direction by teachers trained in the modern science of agriculture, he would have added untold millions to the resources of the South and of the Nation.

The great need of agricultural teaching in the common schools and academies of the South, in farmers' institutes, and through simple literature adapted to the needs of the people is now recognized as never before. If as the result of increased instruction in agriculture there could be a small percentage of increase in the production of cotton and diversified crops, tens of millions would be added to the wealth of the South.

In view of these facts, it is anomalous that there is not a single agricultural school of college grade for colored people in the Nation. Under the Morrill Act a number of schools of normal and preparatory grade have been established. An imperative need is a high-grade agricultural school where the best-equipped and broad-minded young men of the Negro race can be trained as teachers and leaders of their people in agricultural work. Such men are needed to teach agriculture in the numerous colored schools of the South. As lecturers and demonstators at farmers' institutes, their work would be of untold value. The improvement already made in sections that have had this supervision and instruction emphasizes the value and importance of such training. An agricultural department in connection with Howard University would turn the thought and plans of a large number of the best-equipped young colored men toward agriculture as a life work. With our well-equipped science and manual-training departments a limited appropriation would provide for effective training in agriculture.

In view of the urgent need of an agricultural department, it is hoped that some provision, either under the Morrill Act or through special appropriation, shall be made for thorough-going instruction in agriculture in the university. The proximity of the Department of Agriculture and the sympathy of these officers with such work would make adequate provision for such work at limited cost.

## LOSS OF PROFESSORS.

During the last year the university has been singularly bereaved in the death of three members of its faculties, a loss perhaps unprecedented in the history of the institution.

We have first to record the death of Dr. William H. Seamans, for more than 35 years a member of the faculty of the school of medicine. Dr. Seamans was a member of the "senior faculty," who in the early beginnings of the work threw himself, with his high scholarship, broad scientific knowledge, and fine humanitarian spirit, into the work of building up a high-grade school of medicine. He is one of the nine faithful and devoted men who built an aggregate of more than 265 years of service into the school. Their high standing as scholars and scientific experts in their several chairs made possible the ranking of the school of medicine among the best schools of the country. The loss of Dr. Seamans from the chair of chemistry is irreparable. He gave himself with a high sense of consecration to the work of his department until the very last. Three days before his demise he attended a faculty meeting and gave in his resignation from his chair, with evident premonition of his coming demise.

On August 21, 1910, Prof. C. C. Cook, professor of English in the college of arts and sciences, met a sudden and tragic death by drowning off the New Jersey shore. He was the son of the lamented John F. Cook, for so many years a member of the board of trustees. Prof. Cook was a graduate of Howard and also of Cornell University, where he made preparation for the large efficiency he developed as head of the English department of the university. He gave himself with entire devotion to the work of his chair, and the quality of his work may be estimated from the fact that during the last year of his service four debating teams sent out by the university, trained in his department, won signal victories over the leading colored institutions of the country. He was a man of high character, and to his wife and children has left a stainless and noble record, and to the university the memory of long and able service.

On January 26, 1911, Mr. Thomas P. Woodward, lecturer on the law of real property in the school of law, was suddenly stricken and died within a few hours. He had brought to his chair large ability in this important department, and had given himself for eight years with efficiency and success to the school of law. At the semiannual meeting of the board a committee was appointed to draft resolutions on the death of these faithful servants of the university.

## THE SCHOOL OF MEDICINE.

(Medical, dental, and pharmaceutic colleges.)

The importance of a thoroughly well-equipped school of medicine for the training of colored physicians is strongly emphasized in the report of the committee on medical education presented at the annual meeting of the Louisiana State Medical Society, of which Dr. L. C. Le Beuf is chairman, on May 4, 1909, as follows:

> The committee suggests that instead of the several smaller colored schools now struggling against insurmountable odds, some one or two central locations should be selected where prejudice is not so extreme and all means and energy be concentrated in building up one or two large well-equipped universities, which, with ampler means could obtain sufficient hospital advantages and better laboratory equipment. Medical education for colored students could then not only comply with the letter of the law, but also with the requirements of modern medicine. Negro education should be encouraged in medicine, as the 9,000,000 negroes of the South have a right to have physicians of their own race treat them if they so desire. But they also have the right to expect that such physicians shall have had a thorough training in high-grade medical colleges.

Dr. William Osler, of Oxford, in an address before the Harvard medical school, said that he believed Harvard medical school to be only half finished, as it had no hospital attachment. There should be a hospital as great as the school, and it should be a part of the university.

The strategic importance of the Howard University school of medicine is emphasized by its close relations with the Freedmen's Hospital, built and equipped at a cost of half a million dollars, and maintained by the Government. The hospital is built on a part of the campus leased to the Government. Hospital clinics are a necessity in modern medical training. This is the only school of medicine for colored people that has adequate hospital facilities.

*History.*—This school of medicine was founded in 1868. Of the early professors, including some of the leading physicians and scientific men of the District, nine of them built into the work of the school of medicine an aggregate of 264 years of service, 1,279 graduates having been sent forth, and their average record for efficiency and usefulness is high. The average attendance for the last two years is 391, representing this year 27 States and 5 foreign countries. During the last two years the students have paid in tuition fees over $53,000.

*Entrance requirements.*—Beginning with the opening of the last scholastic year entrance requirements were enforced, including one full year of college work in chemistry, biology, physics, and German. This has greatly reduced the attendance for the time being, but the rapid advance in entrance requirements during the last several years seems to be justified by the high grades received by graduates before the State boards.

*Present buildings and equipment.*—The school of medicine now occupies the old Freedmen's Hospital buildings and one of the old wards erected over 40 years ago. The dean estimates that the repairs now needed to put the buildings in condition aggregate over $10,000. While the laboratories have been doubled in capacity and equipment in the last several years, they are altogether inadequate for the nearly 400 students in attendance. Were it not for the new Science Hall, with its modern equipment, we should be unable to meet even in a moderate way the demands of the standards of the Association of American Medical Colleges. And yet the equipment of the great body of physicians who are to largely determine the physical status of the ten and soon to be twenty millions of the Negro race in America is centering in this school.

*School of preventive medicine.*—While the Rockefeller fund of a million dollars is available for the eradication of the hookworm disease, yet here is the Negro race with tuberculosis, typhoid infection, venereal and other diseases wiping out tens of thousands and lowering the vitality and physical efficiency of a race. At the same time their condition is a positive menace to the white race with which it is so closely bound up. It is a question of national interest. Here is a race, multitudes of whom are still the prey of the voodoo doctors and conjure men and given to patent nostrums. The pressing need is for the training of men for the instruction of the ignorant and superstitious, men with scientific knowledge and broad views of medicine, men who can put medical knowledge in simple form before the masses, and through preventive medicine raise the vitality of a race that is being decimated by disease.

Tuberculosis, the scourge of the race, endangers also millions of the white race, with whom they live and with whom they are so closely identified. Dr. Booker Washington at the forty-second opening of the Howard University school of medicine gives the situation:

> I think we have on a conservative estimate about 3,500 negro physicians in America. We need at least 7,000. That will only give about 1 to every 7,000 of the people and, as the president has already stated, in the case of the white race, they have 1 to every 500 or 600 of the total population. So you see that we are a long way from the time when we will be overstocked in this country with negro doctors. * * *
>
> The success of a negro doctor and the increase of the number of negro doctors is not only a matter of interest to the negro people but to the white people of this country. In many parts of the Southland the colored people are equal in numbers to the white people; in many parts of the Southland the colored people outnumber the white population. In many parts where they live side by side it is the negro who raises the food, who prepares the food, who serves the food. In most cases it is the negro who launders the clothes; it is the negro who nurses the baby; it is the negro who touches the white family at every vital point in the life of that white family in some respect. In other respects there are such fundamental elements in the situation that no color line can be drawn. Filth draws no color line. Immorality draws no color line. If by reason of ignorance of the laws of health the black individual in the community has in his body the germs of consumption, inevitably that black man or black woman will carry those germs into the white family. It is impossible for that negro to handle the white man's food, to touch the white man's child day by day, without the white man being just as much affected by disease as is true of the black race. For all these reasons it is very important that the white people throughout this country should realize the work that Howard University is doing in sending out these negro doctors.

*Carnegie Foundation report on the standing of the school.*—After careful investigation, the school has received the strong indorsement of the Carnegie Foundation for the Advancement of Teaching. Among other things, the report says:

> *Howard University Medical College:* Organized 1869. Integral part of Howard University.
>
> *Entrance requirement:* High school or equivalent (now advanced to include one year of college work in chemistry, biology, physics, and a modern language.
>
> *Attendance:* Two hundred and five (not including students in dentistry and pharmacy), most of them working their way through. The students are practically all colored.
>
> *Faculty:* Numbers 52, 22 being professors.
>
> *Resources:* The school budget calls for $40,000, of which $26,000 is supplied by student fees. Though the school has been changed from a night to a day school, the fees increased from $80 to $100, and the admission requirements stiffened, the attendance has, nevertheless, increased.
>
> *Laboratory facilities:* The laboratories provide adequate facilities in anatomy, pathology, histology, bacteriology, and chemistry. There is no museum.
>
> *Clinical facilities:* Clinical facilities are provided in the new, thoroughly modern, and adequate Government hospital of 278 free beds, with its dispensary, closely identified with the medical school. A pavilion for contagious diseases is alone lacking.
>
> Of the medical schools in Washington, Howard University has a distinct mission—that of training the negro physician—and an assured future. The Government has to some extent been the patron of the institution, and has done its medical department an incalculably great service by the erection of the Freedmen's Hospital. Sound policy—educational as well as philanthropic—recommends that this hospital be made a more intimate part of Howard University so that its students may profit to the utmost by its clinical opportunities. Its usefulness as a hospital in its immediate vicinity will thereby be increased, and its service to the colored race at large will be augmented to the extent that it is used to educate their future physicians.
>
> The health of both races is involved in the thorough training of these physicians who are to mold the physical life of 10,000,000 of their people.

*Necessity to the Negro race.*—Medical students of this race are being gradually crowded out of northern schools. This growing segregation of the races emphasizes the present need of a modern, well-equipped school of medicine for the Negro race.

The physician is the only man of science among the colored people. In the judgment of leading physicians and careful scientists, the Howard University school of medicine offers an opportunity unparalleled in America for the physical, social, and moral betterment of the Negro race. In the erection of modern buildings, with up-to-date equipment, with research laboratories, and other facilities, an opportunity is given to do a work that will do more to cleanse and elevate a race of millions and safeguard the 20,000,000 of white people among whom they live than is offered in any other single institution in the Nation.

*Students in attendance in the school of medicine.*

| | | | |
|---|---|---|---|
| Seniors | 38 | Senior pharmaceutic | 13 |
| Juniors | 70 | Middle-year pharmaceutic | 24 |
| Sophomores | 61 | First-year pharmaceutic | 20 |
| Freshmen | 23 | Special students | 12 |
| Senior dental | 21 | | |
| Middle dental | 36 | Total | 365 |
| First-year dental | 47 | | |

Of these, 28 received the degree of M. D., 17 received the degree of D. D. S., and 8 received the degree of Phar. D.

## THE SCHOOL OF LAW.

This is the only school of law in the nation, with adequate faculty and equipment, open especially to the colored race. The school is under the direction of a faculty of judicial and able men. Its courses of study are broad and practical. It aims to send out well-equipped men who shall be able, in a wise and sympathetic way, to direct the people who may seek their counsel. The advancement of the Negro race in their holdings of property in the towns as well as in the country districts, and in the establishment of commercial, banking, manufacturing, and other enterprises, opens broad fields of useful service to the graduates of this school. The subjects taught and the methods of instruction are similar to those of modern schools of law.

*Students in attendance in the school of law.*

| | |
|---|---|
| Seniors | 29 |
| Middlers | 26 |
| Juniors | 49 |
| Specials | 14 |
| Total | 118 |

Of these, 28 received the degree of LL. B.

## THE SCHOOL OF THEOLOGY.

The school of theology is supported in no degree by Congress, but through endowment and special gifts. It requires no doctrinal tests, is interdenominational, and welcomes all who are preparing for greater efficiency in moral and religious work.

The branches taught are the Scriptures in the original, the English Bible, biblical history and antiquities, systematic theology, church history, homiletics, Christian missions, pastoral theology, moral philosophy, natural theology, evidences of Christianity, elocution, rhetoric, and vocal music. There are three courses—a classical and an English day course and a night English course. Only those in the classical course study the Scriptures in the original.

Various denominations are represented among the teachers and students, and all work in harmony. Three teachers give all their time to the work and two part of the time.

*Students in attendance in the school of theology.*

| | |
|---|---|
| Seniors | 17 |
| Middlers | 16 |
| Juniors | 23 |
| Specials | 13 |
| Postgraduates | 1 |
| | 70 |
| Evening institute: | |
| Fourth-year | 14 |
| Third-year | 15 |
| Second-year | 9 |
| First-year | 16 |
| | 54 |
| Total | 124 |
| Correspondence students | 20 |

Of these, 6 received the degree of B. D., 10 received diplomas, and 8 received testimonials.

## THE SCHOOL OF LIBERAL ARTS.

The importance of such a school as this, offering the instruction of strong faculties and the help of well-equipped laboratories and facilities for thorough work in the liberal arts and sciences, is indicated by the fact that during the last 40 years an average of only 75 regular college graduates have been sent forth annually for teaching and leadership among the colored people. The number of students in the college courses in Howard University is greater than the combined enrollment of the college students in all other colored schools in the Nation.

The faculty of the school of liberal arts consists of the officers of instruction of the college of arts and sciences and the teachers' college, whose work is of collegiate grade. Applicants for admission to the freshman class must present at least 15 units, the same entrance requirements as those of the leading colleges of the country. By a unit of secondary work is meant a course of study of one year's duration with recitations of not less than 45 minutes four times a week for a term of not less than 36 weeks. All periods in the several departments of Howard University are 60 minutes.

*List of entrance units from which 15 units may be presented.*

| | | | |
|---|---|---|---|
| English | 3 | Latin | 2, 3, or 4 |
| Mathematics | 2, 2½, or 3 | German | 1 or 2 |
| History | 1, 2, or 3 | French | 1 or 2 |
| Physics | 1 | Physical or commercial geography | ½ or 1 |
| Chemistry | 1 | Civics | ½ |
| Biology | 1 | | |
| Greek | 1 or 2 | | |

## THE COLLEGE OF ARTS AND SCIENCES.

The college of arts and sciences is the department of the university specifically devoted to the pursuit of liberal studies. In facilities and appliances of instruction, in extent and variety of its courses, and in thoroughness and efficiency of teaching this department is keeping abreast of the approved standards in the collegiate world.

### COURSES OF INSTRUCTION.

There are 13 chairs whose courses cover the usual branches of the modern college. The program of study includes courses in astronomy, Bible, botany, chemistry, commercial geography, commercial law, economics, English language, English literature, ethics, French, geology, German, Greek, history, international law, Latin, logic, mathematics, pedagogy, philosophy, physics, political economy, psychology, sociology, Spanish, and zoology.

These courses are divided into (1) the arts group and (2) the science group. The science group has been arranged to meet the needs of those whose special tastes lie in this field as well as those looking forward to the pursuit of medicine, engineering, agriculture, and science teaching.

*Students in attendance in the college of arts and sciences.*

| | |
|---|---|
| Seniors | 27 |
| Juniors | 31 |
| Sophomores | 41 |
| Freshmen | 96 |
| Premedical students | 8 |
| Part-course students | 13 |
| Total | 216 |

Of these, 28 received the degree of A. B.

## THE TEACHERS' COLLEGE.

This college is the department for the study of educational science and the training of teachers. The purpose of the college is to afford opportunity, both theoretical and practical, for the training of teachers of both sexes for elementary and secondary schools, and by instruction and direction to help those who desire to pursue studies and investigations in the science of education.

The work aims (1) to acquaint the students with those principles and practices of education which have changed the methods of secular schools and placed them upon a simple and more effective basis; (2) to lay broad culture in the student himself; and (3) to create a spirit of enthusiastic devotion to the highest of all work—the instruction of the child. The practice school is the laboratory of the department. Members of the senior class give instruction one year as a part of their required training.

The following subjects are taught: Teachers' course in English, physiology, zoology, physiography, physics, nature study, history, gymnastics, Bible, elocution, psychology (elementary and descriptive), history of pedagogy, history of philosophy, ethics, philosophy of education, methods of teaching, and kindergarten methods.

The junior class has enjoyed a course in general culture, including reviews of popular works and discussions of current topics.

*Students in attendance in the teachers' college.*

| | |
|---|---|
| Seniors | 9 |
| Juniors | 14 |
| Sophomores | 29 |
| Freshmen and first year | 60 |
| Part-course students | 13 |
| Graduate students | 4 |
| Total | 129 |

Of these, 9 received the degree of A. B. and bachelor's diploma in education and teaching, 5 received the degree of Ped. B., and 7 received diplomas of graduation.

## THE ACADEMY (PREPARATORY DEPARTMENT).

The academy furnishes a broad and thorough preparatory course, fitting for the college, such as is offered in the best academies of the country. The course covers four years of study. In the junior year the subjects taught are: English composition, elementary rhetoric, ancient history, introductory Latin, the Bible, music, drawing, physiology; also manual training four hours a week. In the submiddle year: English history, English classics, physical geography, geometry, French or German, the Bible, and manual training, such as carpentry, printing, etc. In the middle year: Physics, chemistry, algebra, English classics, essays, mathematics, Latin, Greek, German or French, the Bible as literature, essays, and discussions during the year.

*Students in attendance in the academy.*

| | |
|---|---|
| Seniors | 39 |
| Middlers | 40 |
| Submiddlers | 92 |
| Juniors | 168 |
| Special students | 22 |
| Total | 361 |

Of these, 37 received diplomas.

## THE SCHOOL OF MANUAL ARTS.

The department of manual arts is closely affiliated with the teachers' college and the academy in order to serve the double purpose of giving instruction in the manual arts and also of training teachers competent to teach manual training in the graded and secondary schools. The demand for teachers who can give instruction in manual training, domestic science, and the domestic arts, in addition to academic subjects, is more and more urgent. By a proper correlation of the industrial and academic work the design is to make this department of the university of much more value to the people whom Howard University must equip and elevate.

The subjects taught are free-hand and mechanical drawing, woodwork, sheet-metal work, printing, sewing, cooking, weaving, basketry, garment making, millinery, and cookery. The courses are open to all students of the university. The enrollment is as follows:

| | |
|---|---|
| Printing | 20 |
| Domestic arts | 58 |
| Woodwork | 95 |
| Drawing | 55 |
| Domestic science | 60 |
| Total | 288 |

## THE COMMERCIAL COLLEGE.

This department offers a business course and English high-school education combined. In view of the rapid agricultural, commercial, and industrial advancement of the Negro race in the acquiring of farms, building of towns, and the opening of insurance offices, banking houses, and commercial enterprises, the demand for young men and women who have adequate business training is urgent. The commercial college offers courses in bookkeeping, commercial law, history, civics, etc. Special emphasis is placed on reading and spelling, grammar, and arithmetic. The department maintains special classes in typewriting, shorthand, and English grammar. All students in the first-year class are required to spend four hours a week in the industrial department. The instruction is designed to fit pupils for intelligent citizenship and practical business.

The following branches are taught in the various classes: Higher English, mathematics, stenography and typewriting, physics, bookkeeping, political economy, civics, commercial law, commercial geography, sociology, zoology, physiology, statistics, and history of commerce.

*Students in attendance in the commercial college.*

| | |
|---|---|
| Fourth-year class | 12 |
| Third-year class | 16 |
| Second-year class | 18 |
| First-year class | 33 |
| Special students | 34 |
| Total | 113 |

Of these, 9 received diplomas.

## REPORT OF TREASURER.

The report of the treasurer shows a small balance. It has only been by the most rigid economy and the keeping of many salaries at a very low figure that a deficit has been avoided. The increase in expenses incident to the rapid growth of the institution have barely been met by the increase in income.

The treasurer's report follows "the standard form for the financial reports of colleges, universities, etc.," furnished, as the result of a prolonged inquiry and of the views of many expert accountants, by the Carnegie Foundation for the Advancement of Teaching. The system of bookkeeping followed is well adapted to these forms of accounts.

In addition to the work of the Auditor for the Interior Department in auditing the expenditures of the appropriation by the Government, the vouchers and books of the university for this year have been audited and certified by the American Audit Co., of New York City.

Very respectfully,

Wilbur T. Thirkield,
*President.*

The Secretary of the Interior.

# APPENDIX.

## FINANCIAL REPORT.

I have the honor to add the following statement from the report of treasurer:

*Expenditure of appropriation for maintenance, fiscal year ended June 30, 1911.*

| | | |
|---|---|---|
| General officers: | | |
| President | $4,400.00 | |
| Secretary, in part | 1,125.00 | |
| Treasurer, in part | 1,125.00 | |
| Engineer, in part | 804.96 | |
| Librarian | 900.00 | |
| Bookkeeper, in part | 754.04 | |
| Preceptress | 650.00 | |
| Cataloguer | 600.00 | |
| Assistant librarian, in part | 450.00 | |
| Assistant preceptress, in part | 160.00 | |
| | | $10,969.00 |
| College of arts and sciences: | | |
| Dean and professor of mathematics | 1,760.00 | |
| One professor of biology | 1,650.00 | |
| One acting associate professor of English | 1,600.00 | |
| One professor of history, in part | 1,485.00 | |
| One professor of Latin, in part | 1,485.00 | |
| One acting professor and instructor in mathematics | 1,350.00 | |
| One instructor of French, in part | 1,237.50 | |
| One professor of chemistry, in part | 1,150.00 | |
| One professor of social science, in part | 1,125.00 | |
| One professor of physics, in part | 1,050.00 | |
| One assistant professor of biology | 1,000.00 | |
| One acting professor of German, in part | 990.00 | |
| One instructor in chemistry, in part | 900.00 | |
| One professor of Greek | 500.00 | |
| | | 17,282.50 |
| Teachers' college: | | |
| Dean and professor of pedagogy | 2,160.00 | |
| One associate professor of mathematics, in part | 1,350.00 | |
| One instructor in education and kidnergarten, in part | 1,080.00 | |
| One director of music | 900.00 | |
| One instructor in methods, in part | 900.00 | |
| One instructor in English and literature, in part | 765.00 | |
| One assistant director of music | 500.00 | |
| | | 7,655.00 |
| Academy: | | |
| Dean and professor of Latin and Greek | 1,760.00 | |
| Four instructors in English, in part | 2,350.00 | |
| One instructor in Latin and Greek | 750.00 | |
| One instructor in physics | 700.00 | |
| One instructor in mathematics | 450.00 | |
| Four instructors in modern languages, in part | 530.00 | |
| | | 6,540.00 |
| Commercial college: | | |
| Dean and professor of commercial law, in part | 1,125.00 | |
| One instructor in bookkeeping, in part | 765.00 | |
| One instructor in shorthand | 700.00 | |
| One instructor in history and civics, in part | 643.50 | |
| One instructor in English, in part | 520.00 | |
| | | 3,753.50 |

| | | |
|---|---|---|
| The school of law: | | |
| Dean and lecturer on contracts, constitutional law and statutory laws | $1,300.00 | |
| One lecturer on pleading and practice | 1,300.00 | |
| One lecturer on torts, crimes, misdemeanors, and corporations | 1,200.00 | |
| One lecturer on evidence, personal property; also librarian. | 1,500.00 | |
| One lecturer on domestic relations and commercial paper. | 867.75 | |
| One lecturer on commercial law and instructor in pleading and practice | 700.00 | |
| One lecturer on the laws of real property, in part | 131.25 | |
| | | $7,000.00 |
| Total | | 53,200.00 |

*Expenditure of appropriation for the school of manual arts and applied sciences.*

| | |
|---|---|
| Director | $1,100.00 |
| One instructor in woodwork | 1,200.00 |
| One instructor in domestic arts | 1,100.00 |
| One instructor in domestic science | 1,100.00 |
| One instructor in printing | 900.00 |
| One instructor in drawing | 800.00 |
| | 6,200.00 |
| Tools, materials, fuel, etc | 2,800.00 |
| | 9,000.00 |

*Expenditure of appropriation for natural-history studies and laboratories.*

| | |
|---|---|
| Chemical laboratory | $160.62 |
| Biological laboratory | 172.52 |
| Physics laboratory | 166.86 |
| | 500.00 |

*Expenditure of appropriation for repair of buildings and improvement of grounds.*

| | |
|---|---|
| Repairs to buildings | $3,847.49 |
| Improvement of grounds | 152.51 |
| | 4,000.00 |

*Expenditure of appropriation for books, etc.*

| | |
|---|---|
| Academic library books, etc | $1,150.00 |
| Law library books, etc | 350.00 |
| | 1,500.00 |

*Expenditure of appropriation for fuel and light.*

| | |
|---|---|
| Coal and wood | $2,375.08 |
| Gas and electricity | 1,124.92 |
| | 3,500.00 |

*Expenditure of appropriation for school of medicine*

| | |
|---|---|
| Equipment and apparatus | $6,081.79 |
| Laboratory supplies | 3,918.21 |
| | 10,000.00 |

*Buildings.*

| | |
|---|---|
| Addition to manual training and arts building | $23,000.00 |

*Summary of expenditure of appropriations, fiscal year ended June 30, 1911.*

| Items. | Appropriation. | Current expense accounts. | Plant fund expenditure equipment. |
|---|---|---|---|
| Disbursed through treasurer of university: | | | |
| Salaries and wages, including teachers' college | $53,200.00 | $53,200.00 | |
| Department of manual arts | 9,000.00 | 7,659.49 | $1,340.51 |
| For library equipment, books, etc | 1,500.00 | 509.74 | |
| Academic | | | 708.06 |
| Law | | | 282.20 |
| Improvement of grounds and repairs to buildings | 4,000.00 | 4,000.00 | |
| School of medicine, equipment and laboratory supplies | 10,000.00 | 3,918.21 | 6,081.79 |
| Laboratories, apparatus, and material | 500.00 | 500.00 | |
| Fuel and light | 3,500.00 | 3,500.00 | |
| Addition to manual training and arts building | 23,000.00 | | 23,000.00 |
| Total credited permanent fund account | | | 31,412.56 |
| Total credited current fund | | 73,287.44 | 73,287.44 |
| Total appropriation | 104,700.00 | | 104,700.00 |

*General summaries for fiscal year ended June 30, 1911, from all sources.*

### CURRENT FUND.

| | |
|---|---|
| Total income for current expenditure for year | $138,789.15 |
| Total current expenditure for year | 135,338.56 |
| Net surplus of current fund for year | 3,450.59 |
| Expenditure for permanent plant where there was no special fund | 2,122.07 |
| Net increase of current fund | 1,328.52 |

### PERMANENT FUND.

| | |
|---|---|
| Total income for increase of educational plant | 31,583.83 |
| Total expenditure for increase of educational plant, not including amount charged current fund | 31,522.53 |

### SUMMARY OF ABOVE.

| | |
|---|---|
| Income as above | 170,372.98 |
| Expenditure as above | 168,983.16 |

### SUMMARY OF ALL INCOME AND EXPENDITURE.

| | | |
|---|---|---|
| Income as above | | 170,372.98 |
| Additional income for dormitories | $5,711.14 | |
| Additional income for boarding hall | 16,203.01 | |
| | | 21,914.15 |
| Total income for all purposes | | 192,287.13 |
| Expenditure as above | | 168,983.16 |
| Additional expenditure for dormitories | $5,711.14 | |
| Additional expenditure for boarding hall | 16,203.01 | |
| | | 21,914.15 |
| Total expenditures for all purposes | | 190,897.31 |

### SOURCES OF INCOME.

| | | |
|---|---|---|
| Donations | | $2,766.50 |
| United States Government appropriation | | 104,700.00 |
| Income from endowments | | 15,694.67 |
| From students | | 47,781.00 |
| Miscellaneous | | 1,300.86 |
| | | 172,243.03 |
| Less scholarships and gratuities to students | | 1,870.05 |
| Total income as above | | 170,372.98 |
| Income as above | | 170,372.98 |
| Additional from students for dormitories | $5,711.14 | |
| Additional from students for boarding hall | 16,203.01 | |
| | | 21,914.15 |
| Total | | 192,287.13 |

### *Balance sheet; June 30, 1911.*

#### CURRENT FUND.

| | | |
|---|---|---|
| Assets: | | |
| Cash in banks and on hand for current expenses | | $2,837.69 |
| Accounts receivable | | 16,787.00 |
| Due from endowment funds | | 1,243.75 |
| Supplies | | 1,621.90 |
| Prepaid insurance | | 929.17 |
| Total current assets | | 23,419.51 |
| Liabilities: | | |
| Notes payable | | 6,000.00 |
| Accounts payable | | 1,289.33 |
| Interest accrued | | 150.83 |
| Total current liabilities | | 7,440.16 |
| Surplus of current assets | | 15,979.35 |
| Total | | 23,419.51 |

#### PERMANENT FUND.

| | | |
|---|---|---|
| Investment assets: | | |
| Securities | $185,720.00 | |
| Productive real estate | 96,735.96 | |
| | | 282,455.96 |
| Cash in banks for investment | | 2,012.21 |
| Unproductive land | | 132,077.19 |
| Loans to medical students and cash in hands of treasurer-secretary, school of medicine, part of loan fund | | 420.00 |
| Total investment assets | | 416,965.36 |
| Endowment funds, etc.: | | |
| Mortgages against investments | | 18,000.00 |
| Endowment capital accounts— | | |
| Funds for general purposes | $165,972.42 | |
| Funds for designated purposes | 115,239.79 | |
| | | 281,212.21 |
| Land fund (unrestricted fund) | | 114,077.19 |
| Medical students' aid loan fund | | 1,203.40 |
| Unexpended balance of permanent plant funds | | 1,228.81 |
| Total endowment funds, etc | | 415,721.61 |
| Balance due to current funds | | 1,243.75 |
| | | 416,965.36 |

### EDUCATIONAL PLANT.

| | |
|---|---|
| Land, buildings, and equipment: | |
| At beginning of year | $1,231,599.58 |
| Additions during year ended June 30, 1911 | 33,644.60 |
| Total educational plant | 1,265,244.18 |
| Capital fund account: | |
| Educational plant, capital fund account | 1,265,244.18 |

*Income and expenditure, current fund, fiscal year ended June 30, 1911.*

### INCOME.

| | | | |
|---|---|---|---|
| Income from students: | | | |
| College of arts and sciences, teacher's college, commercial college, and academy: Incidental and matriculation fees | | $7,722.62 | |
| College of arts and sciences and academy laboratory fees | | 748.93 | |
| School of theology: Incidental and matriculation fees | | 509.00 | |
| School of law: Tuition, matriculation, and graduation fees | | 3,721.35 | |
| School of medicine: Tuition, matriculation, graduation, and laboratory fees | | 31,795.50 | |
| Library fees | | 1,006.60 | |
| Music department: Tuition and practice fees | | 1,505.47 | |
| For dormitories, net | | 225.24 | |
| For dining hall, net | | 586.48 | |
| Total of above | | 47,821.44 | |
| Less loss on bookstore | | 40.44 | |
| | | | $47,781.00 |
| Income from investments: | | | |
| Endowments for general purposes | | 9,537.66 | |
| Endowments for designated purposes | | 6,157.01 | |
| | | | 15,694.67 |
| Income from United States appropriation, for current expenses | | | 73,287.44 |
| (Total appropriation of the Government was $104,700.) | | | |
| Gifts as per donors' list: | | | |
| For general purposes | | 335.00 | |
| For designated purposes— | | | |
| For school of theology | $2,000.00 | | |
| For excellence in political science | 5.00 | | |
| For students' aid | 310.00 | | |
| | | 2,315.00 | |
| | | | 2,650.00 |
| Income from other sources: | | | |
| Chapel collections | | 245.11 | |
| Interest | | 216.07 | |
| Post office | | 29.75 | |
| Miscellaneous | | 755.16 | |
| | | | 1,246.09 |
| | | | 140,659.20 |
| Less amount given students in scholarships and gratuities | | | 1,870.05 |
| | | | 138,789.15 |
| Income, as above | | | 138,789.15 |
| Additional from students for dormitories | | | 5,711.14 |
| Additional from students for board | | | 16,203.01 |
| Total income | | | 160,703.30 |

### EXPENDITURES.

| | | | |
|---|---|---|---|
| Departmental expenses: | | | |
| College of arts and sciences, teacher's college, commercial college, and academy | | $43,414.32 | |
| School of manual arts and applied sciences | | 8,297.00 | |
| School of theology | | 4,696.24 | |
| School of law | | 8,323.69 | |
| School of medicine: | | | |
| Expenses paid from school's income | $35,474.29 | | |
| Heat, water, and repairs not paid from school's income | 857.36 | | |
| | | 36,331.65 | |
| Carnegie Library | | 3,680.42 | |
| Music department | | 1,531.09 | |
| | | | $106,274.41 |
| Administration and general expenses: | | | |
| Salaries of president, secretary, treasurer, and auditor | | 7,370.20 | |
| Salaries of assistants, stenographers, etc | | 3,791.97 | |
| Heat, light, and water | | 448.26 | |
| Telegraph and telephone | | 474.13 | |
| Printing and stationery | | 864.13 | |
| Postage | | 367.95 | |
| Traveling | | 404.25 | |
| Advertising | | 340.19 | |
| Insurance | | 405.78 | |
| Publication expenses | | 959.67 | |
| Other general expenses | | 716.71 | |
| | | | 16,143.24 |
| Maintenance of plant: | | | |
| Salaries | | 3,235.29 | |
| Repairs and renewals | | 7,378.03 | |
| Care and improvement of grounds | | 826.76 | |
| | | | 11,440.08 |
| Expenses of productive real estate | | | 1,074.81 |
| Interest | | | 406.02 |
| | | | 135,338.56 |
| Expenditures, as above | | | 135,338.56 |
| Additional for dormitories | | | 5,711.14 |
| Additional for boarding hall | | | 16,203.01 |
| Total expenditures | | | 157,252.71 |

*Income from permanent plant funds.*

| | | |
|---|---|---|
| Donations for: | | |
| Alumni gymnasium fund | $105.00 | |
| History department fund | 7.50 | |
| Howard memorial fund | 4.00 | |
| | | $116.50 |
| Appropriation of the United States Government for increase of education plant and equipment: | | |
| New manual arts building | 23,000.00 | |
| Manual arts department equipment | 1,340.51 | |
| Books for Carnegie Library | 708.06 | |
| Books for law library | 282.20 | |
| School of medicine equipment | 6,081.79 | |
| | | 31,412.56 |
| For framing picture | | 2.00 |
| Interest alumni gymnasium fund | 51.15 | |
| Medical building fund | 1.62 | |
| | | 52.77 |
| Total income | | 31,583.83 |

| Unexpended balances brought forward from previous year, viz: | | |
|---|---|---|
| Alumni gymnasium fund | $926.85 | |
| History department equipment fund | 83.35 | |
| Library fund | 94.47 | |
| School of medicine building fund | 54.08 | |
| Howard memorial fund | 8.76 | |
| | | $1,167.51 |
| | | 32,751.34 |

*Endowment funds, with income.*

| Names of funds. | Principal. | Income. |
|---|---|---|
| Scholarship aid | $19,511.32 | $1,020.59 |
| Lincoln memorial prize scholarship fund | 700.00 | 35.00 |
| Thaddeus Stevens professorship | 2,200.00 | 110.00 |
| Law professorship | 10,010.00 | 500.50 |
| Crebel professorship | 2,450.00 | 122.50 |
| Whittier professorship | 875.00 | 43.75 |
| Martha Spalding | 8,828.26 | 441.41 |
| J. P. Thompson scholarship | 260.00 | 13.00 |
| Edward Smith textbook fund | 500.00 | 25.00 |
| Hartford reading-room fund | 425.00 | 21.25 |
| Mary B. Patton scholarship | 1,200.00 | 60.00 |
| Francis B. Schoals scholarship | 6,000.00 | 300.00 |
| The Stone professorship of theology | 40,000.00 | 2,350.00 |
| Wm. E. Dodge scholarship | 5,000.00 | 250.00 |
| Frederick Douglass scholarship | 8,503.11 | 425.15 |
| J. K. McLean scholarship | 1,000.00 | 50.00 |
| Orange Valley Church scholarship | 1,000.00 | 50.00 |
| Horace Ford scholarship | 1 000.00 | 50.00 |
| Thomas Cropper Riley scholarship | 1,000.00 | 50.00 |
| Wm. W. Patton scholarship | 1,000.00 | 50.00 |
| Wm. W. Patton memorial professorship | 12.10 | .61 |
| John W. Alvord scholarship | 1,000.00 | 50.00 |
| Pomeroy scholarship | 2,500.00 | 125.00 |
| Caroline Patton Hatch fund | 200.00 | 10.00 |
| Alumni professorship | 25.00 | 1.25 |
| School of theology alumni fund | 40.00 | 2.00 |
| | 115,239.79 | 6,157.01 |

## RECAPITULATION.

| Funds. | Principal. | Income. |
|---|---|---|
| Students' aid funds | $55,542.69 | $2,812.15 |
| Students' scholarship funds | 3,200.00 | 160.00 |
| Professorship funds | 55,572.10 | 3,138.61 |
| Textbook funds | 500.00 | 25.00 |
| Reading-room funds | 425.00 | 21.25 |
| Total for designated purposes | 115,239.79 | 6,157.01 |
| Endowment funds for general purposes | 165,972.42 | 9,537.66 |
| | 281,212.21 | 15,694.67 |

The accounts of Howard University for the year ended June 30, 1911, have been audited and certified by the American Audit Co., of New York City.

EDWARD L. PARKS,
*Treasurer.*

# REPORT OF THE SUPERINTENDENT OF THE UNITED STATES CAPITOL BUILDING AND GROUNDS.

# REPORT OF THE SUPERINTENDENT OF THE UNITED STATES CAPITOL BUILDING AND GROUNDS.

Office of Superintendent,
United States Capitol Building and Grounds,
*Washington, D. C., October 14, 1911.*

Sir: In presenting the annual report of this office for the fiscal year 1911, I desire to call attention to the increased administrative service now rendered. In the year 1905 supervision was exercised over the real-estate values, repairs and improvements on the following buildings: The Capitol Building and Grounds; the Courthouse, Washington, D. C. (under the direction of the Department of Justice); the Court of Claims Building (under direction of Court of Claims).

Since that date there has been added to our supervision and maintenance by construction, or otherwise, the following: The Senate Office Building, the House Office Building, the heating, lighting, and power plant for the Capitol and other congressional buildings, and subways connecting the Capitol with the office buildings; the Court of Appeals addition to the Courthouse, Washington, D. C.

The four last-named structures and subways have been constructed by the Superintendent United States Capitol Building and Grounds, under various acts and terms of Congress, and the following statistics may be of interest. There is omitted from this table the original Courthouse and the Court of Claims Building:

*Principal buildings under the supervision of the Superintendent of Capitol Building and Grounds.*

| Buildings. | Authorized. | Completed and occupied. | Value of building. | Value of grounds. | Total value of buildings and grounds. |
|---|---|---|---|---|---|
| Capitol | | | $15,000,000 | $10,400,000 | $25,400,000 |
| Senate Office Building. | Sundry civil act approved Apr. 28, 1904. | Mar. 5, 1909 | 3,732,078 | 746,111 | 4,478,189 |
| House Office Building. | Sundry civil act approved Mar. 3, 1903. | Jan. 10, 1908 | 3,342,011 | 743,452 | 4,085,463 |
| Congressional power plant. | Sundry civil act approved Apr. 28, 1904. | Dec. 1, 1910 | [1] 1,545,857 | ([2]) | 1,882,857 |
| Court of Appeals Building. | Sundry civil act approved May 30, 1908. | Oct. 1, 1910 | 240,717 | ([2]) | 240,717 |

[1] Subways, $337,000.

[2] Public reservations.

The above table shows an addition in supervision of values amounting to $10,687,226.

Reports on details of construction of the Senate and House Office Buildings and the congressional power plant and subways are to appear later under authority of Congress. The reports herewith submitted for the appendix are therefore more or less descriptive.

## THE CAPITOL.

The care and maintenance of the Capitol Building during the past fiscal year has been full of more than usual interest, by reason of the extra session of Congress. All usual preparations in the way of repairs and improvements had been made for the regular congressional year. The advent of the extra session brought with it a great number of readjustments calling for many changes and reconstructions, to be made by this office, not only in the Capitol Building, but in the Senate and House Office Buildings. It is not necessary to specify these in great detail, as a full record is on file in this office. Sufficient to say that items for the year were 1,292 in number. Some of the most important are now stated:

The entire central portion of the Capitol (constructed of sandstone) and the dome surmounting it has been cleaned down and painted.

The policy of restoration carried out in the old central portion of the building, mentioned in last year's report, has been continued, and during the present season the walls of corridors leading from the crypt in the basement story northward to the Senate wing and those leading northward from the rotunda were repaired and refinished to conform to the surroundings. More of this work remains to be done during the coming recess, being prevented at this time by conditions incident to the extra session.

A new iron stairway has been constructed leading directly from the large corridor in front of the Senate post office, basement story, Senate wing, to the sub-basement floor below. This lands directly at the entrance to the subway connecting the Capitol with the Senate Office Building and provides a much needed and quick approach to the subway for persons not desiring to use the elevators.

A new skylight, 36 feet by 10 feet in dimensions, has been installed over the Senate document room.

New lavatories and toilets have been installed in the rooms of the Senate Committees on Naval Affairs, Rules, Foreign Relations, and the Senate library and document room.

In the Senate wing the following rooms have been painted or painted and decorated: The rooms occupied by the Committees on Commerce, Privileges and Elections, Immigration, Territories, Judiciary, Rules, Indian Affairs, Transportation and Sale of Meat Products, Pacific Islands and Porto Rico, Foreign Relations, Education and Labor, Census, Agriculture, Public Buildings and Grounds, and the Vice President's room. Other rooms as follows: Senate post office, Senate disbursing clerk's room, Senate press gallery and reporters' room, Senate barber shop, and room No. 2, Senate terrace.

Stairways leading to the dome, elevator shafts, and motor rooms in this section have been cleaned and painted.

In the Supreme Court section of the Senate wing extensive repairs have been made. The court heating plant has been much improved by substituting modern steam coils for the old type steam benches. The Supreme Court room, Attorney General's room, court reporters' room, and marshal's office have been repainted and decorated where necessary. Additional plumbing fixtures have been installed, including new lavatory in the robing room.

The removal of the file room of the House to another location made possible the execution of an order of the House assigning the space vacated to the House Committee on Appropriations. To carry this into effect the file room was transferred to the attic story and located in a room formerly used by press reporters. A doorway was cut through the side wall, giving access to space in the rear of the west principal stairway, attic story, and that space allotted and adjusted to the use of the file room.

The intervening doorway on the principal floor between the committee rooms and the old file room, which had been closed, was reopened and suitable double-acting doors installed in conformity with others in the committee rooms. This readjustment involved the removal of a large amount of steel case work and files and the refitting of the cases in the new location. In this connection two new lavatories were installed.

A new skylight with ventilators 36 feet by 10 feet in size was placed over the House library.

In the House folding room several of the aisle spaces have been concreted, and repairs made to the room occupied by the foreman, to the stairway, and to the wooden floors.

Repairs were made to the House kitchen and a new dish-washing machine installed. Additional lunch accommodations for the general help were provided.

The rooms of the House Committees on Reform in the Civil Service, Enrolled Bills, Rules, Pensions, Manufactures, and the room allotted the minority leader were painted and decorated.

Statuary Hall was thoroughly overhauled, and the restoration of the stonework in the hall, accomplished last season, was supplemented during the present by the painting of all plaster side walls and the ornamental ceiling.

A number of rooms throughout the building have been rewired in a permanent manner in steel conduit, replacing old conduits of other and less permanent and safe material.

The space in the attic story of the west central section, occupied by the House document room, contains important files of the House, stored on wooden shelving which is painted with fireproofing paint. An effort to secure suitable steel cases failed. The lighting was done in a temporary and not altogether safe manner. To protect, as far as possible, such temporary installation of the files the old wiring has been removed and the distribution of current carried in steel conduit with suitable outlet boxes placed only at the important points, with a minimum use of portable cord and fixtures.

For the benefit of this section and sections adjacent, permanent ventilating skylights have been installed to take the place of temporary ones formerly in place. It is to be hoped that the House of Representatives will soon authorize the installation of steel fireproof shelving for this section.

New chandeliers have been installed in a number of rooms throughout the Capitol. These chandeliers are of a style and type which should be suitable for a long period of time, the effort being made to have them conform to the general architectural requirements of their structural surroundings.

I will not detail the repairs carried out in the lighting, heating, and ventilating departments of the Capitol. They were general in character, such as the overhauling of the large number of ventilating motors and fans, elevator motors and controlling boards, and the renewal of the cables on 26 of the elevators. Our card system of daily inspection on all elevators and their machinery continues. Every possible precaution is taken by this early morning inspection to prevent the use of a machine not fit for service.

Mention should be made of the thousands of feet of air ducts which must be cleaned and whitewashed annually, cellar passageways to be cleaned and painted, air chambers under the floors of the House and Senate chambers to be scoured, disinfected, to be followed by similar processes every two weeks during the session; bronze ventilating risers in the chamber floors taken out, treated with live steam and replaced in absolutely clean condition.

The departments named have a multitude of things to do, all of which bear on the general health of the Members and Senators, both as relates to the Halls of the House and Senate and the committee rooms in general. The fact that these things rarely reach the attention of those who occupy the upper stories of the building, prompts me to speak of them here.

The practical completion (though not final acceptance in detail) of the new congressional heating and power plant enabled us to furnish, during the past year, light, heat, and power to the Capitol Building, the Senate and House Office Buildings, and in a large measure to the Library of Congress. So far, the operation of the plant has been very satisfactory; and although operating under somewhat abnormal conditions, very economical, as compared to past yearly expenditures under divided and somewhat widely separated plants. There have been no breakdowns serious enough to warrant particular attention. Such as occurred did, at no time, inconvenience Congress. They were incident to the beginning of any enterprise as great as the one which the Government has just entered into with this plant. We will now be able to displace the large amount of machinery located in the sub-basement of the building and utilize the space for storage.

Mention may be made here of the fact that the Senate and House Office Buildings have been maintained in excellent shape for occupancy during the past fiscal year. In the case of appropriations for the maintenance of these two buildings, the disbursements are made by the Interior Department, although all expenditure of money is under the supervision of the Senate Committee on Rules for the Senate Building, and the House Office Building Commission for the House Building. The detailed report, therefore, both as to maintenance and expenditure of money, has been and will be made to these two congressional commissions.

## CAPITOL GROUNDS.

An examination of the trees in the Capitol Grounds during the past season disclosed the fact that a number were in poor condition, due to breaks, splits, or to other forms of disease affecting the most vital parts.

It is well known that when the Capitol Grounds were enlarged in 1873 a number of existing trees were taken up and relocated. The filling material used in leveling up the grounds was not of the best character; and the relocating of the trees was done in a period when the science of tree culture and care had not reached the present-day knowledge of the cure of disease or perfect handling of fractures.

To-day, due to the more modern science of tree care, such results and diseases are, apparently, as susceptible of treatment as those of the human body.

The trees on the Capitol Grounds are granted but little more immunity from accident or disease than those of other localities. To-day, it is evident that experts can take hold of the tree in almost any stage of the disease, and if, as in the case of the human body, the disease has not progressed too far, life may be prolonged to ripe old age.

Impressed with the work of the experts elsewhere (some have called them "tree surgeons"), steps have been taken to cure evils found to exist; and enough has already been accomplished to cause hope that some of the worst cases will yield to treatment and the trees be saved. Much gratification has been experienced over the results obtained through another development connected with this subject. It is now possible to spray with power sprayers any tree that exists in the Capitol Grounds. Such a sprayer was put into service on the grounds just in time to save the trees from the pest which last year robbed them—particularly the elms—of their foliage early in the season. The advantage of the sprayer used here seems to be that because of its power it can be effective under the topmost leaves. In the case of our man-power sprayers, this result was not obtained in any great degree. Other pests which afflict the trees are and have been studied by experts of the Agricultural Department and remedies suggested.

The shrubbery in the grounds has shown manifest improvement during the past year, owing to judicious pruning and thinning out.

The lawns in the grounds, and those about the new office buildings, always a source of anxiety, have fared very well during the past season. Viewed from the walk levels, they have appeared well clothed with grass, even during the trying months of the early summer. As they are much seen from the lofty positions of the terrace and the south, west, and north floors of the Capitol, they have from these positions sometimes appeared to disadvantage. We rely on improvement during the coming season, owing to the considerable amount of fertilizing during the year past.

The walks in the Capitol Grounds are in fair condition. The presence of the underground railway tunnel along the line of First Street East is a source of much trouble to the walks and walls along that section. Along this eastern line of the grounds the railway tunnel was constructed by the tunneling method, not by the open-cut method. Settlement of the earth above the construction has, by the very nature of the work, occurred. The walls and walks were at one time readjusted, but the settlement continues, and the walls and walks are under almost constant repairs and readjustment. Application will again be made to Congress for the repaving of the plaza at the east front of the Capitol and for the restoration of the foot pavements directly in front of the building and for the circular section between East Capitol Street and the north and south roadways in the eastern grounds.

The usual plantings have been made for the varying seasons of the year past, in the plant cases located on the terrace and east of the building.

## ENGINE HOUSE AND SENATE AND HOUSE STABLES.

At these buildings, the necessary repairs to buildings and stalls, plumbing, painting, etc., have been executed, including the removal of the old cobblestone driveways at the House stable, and their replacement with concrete driveways.

## COURT OF CLAIMS BUILDING.

A new passenger elevator has been installed and the skylights on the building thoroughly repaired and painted.

## COURTHOUSE, DISTRICT OF COLUMBIA.

At the courthouse a large amount of new work and repairs were done during the past year. In the bar association library, the District attorney's office, marshal's office, law library, and the new toilet, electric lights, including fixtures, were installed. In the bailiff's room the plumbing was overhauled and put in good condition. The old floors in a number of rooms and toilets were taken up and concrete floors laid. Plumbing in the public and private toilets on the basement floor was changed, and lavatories installed in the auditor's office and the office of the recorder of deeds. In the office of the recorder of deeds new window frames and sash were installed and the rooms painted. A number of rooms and stairways in the first and second stories were painted, and the doors rubbed down and varnished. The steam-supply pipes were extended to the third floor and radiators set to conform with the extensions. The basement story was whitewashed and all necessary repairs made to the heating and lighting plants. A No. 2 Worthington pump and hot-water reservoir were furnished and installed. All needed repairs were made to the roofs.

## BOTANIC GARDEN.

The superintendent of the Botanic Garden reports that the exterior and part of the interior of the large conservatory, the superintendent's lodge, and the greenhouses south of Maryland Avenue were painted; that new tin roofs were put on the cottage south of Maryland Avenue, on the furnace room, and the superintendent's lodge; large doors put up at the Second Street entrance of Maryland Avenue building, and sliding doors installed at the greenhouse; and repairs made to the stable, heating apparatus, and chimney outlets. He also reports that some 1,500 square yards of footwalks and driveways in the grounds and 150 yards of asphalt paving in stable yard have been laid.

## EXPENDITURES.

*Expenditures for the fiscal year ended June 30, 1910, were as follows:*

### CAPITOL BUILDING AND REPAIRS.

| | |
|---|---|
| Pay rolls | $16,183.34 |
| Labor vouchers | 508.00 |
| Machinery, ironwork, and metal work | 1,812.50 |
| Brushes, sponges, and soap | 597.08 |
| Lumber and millwork | 1,699.86 |

| | | |
|---|---|---|
| Hardware | | $1,312.88 |
| Lime, brick, cement, and sand | | 98.94 |
| Paint, oil, and glass | | 2,666.58 |
| Marble, stone, brick, plastering, and concrete work | | 2,740.88 |
| Electric wiring, etc | | 329.31 |
| Drawing materials, blue prints, etc | | 29.93 |
| Hauling, expressage, telegrams, etc | | 68.45 |
| Plumbing and plumbing material | | 2,405.81 |
| Elevators and repairs | | 1,068.20 |
| Roofing and tin work | | 328.33 |
| Painting, decorating, and whitewashing | | 175.00 |
| Tile and tiling | | 81.50 |
| Stationery and books | | 93.70 |
| Tackle, rope, and flags | | 157.00 |
| Office vehicle | | 612.95 |
| Repairs to kitchen range and fixtures | | 687.30 |
| Miscellaneous | | 88.43 |
| Reserved for unpaid bills | | 5,764.03 |
| | | 39,450.00 |
| Appropriated: | | |
| Sundry civil act approved June 25, 1910 | $30,000.00 | |
| Deficiency act approved Dec. 23, 1910 | 2,500.00 | |
| Deficiency act approved Mar. 4, 1911 | 1,200.00 | |
| Deficiency act approved Mar. 4, 1911 | 4,000.00 | |
| Deficiency act approved July 21, 1911 | 1,750.00 | |
| | | 39,450.00 |

### IMPROVING THE CAPITOL GROUNDS.

| | | |
|---|---|---|
| Pay rolls | | $20,785.16 |
| Labor vouchers | | 858.61 |
| Plants and sodding | | 574.38 |
| Fertilizers | | 1,272.85 |
| Tools and machinery | | 3,175.08 |
| Brushes, brooms, etc | | 408.50 |
| Gasoline and batteries | | 207.22 |
| Brick, cement, lime, etc | | 15.45 |
| Plumbing materials | | 144.18 |
| Hardware | | 148.74 |
| Paving, and repairs | | 1,457.59 |
| Freight and expressage | | 11.44 |
| Hose and couplings | | 146.30 |
| Lumber and carpenter work | | 191.91 |
| Removing snow | | 1,625.00 |
| Miscellaneous items | | 67.30 |
| Arsenate of lead | | 117.00 |
| Traveling expenses | | 144.20 |
| Reserved for unpaid bills | | 749.09 |
| | | 32,100.00 |
| Appropriated: | | |
| Sundry civil act approved June 25, 1910 | $30,000.00 | |
| Deficiency act approved May 4, 1911 | 2,100.00 | |
| | | 32,100.00 |

### LIGHTING CAPITOL GROUNDS, ETC.

| | |
|---|---|
| Pay rolls | $68,320.41 |
| Labor vouchers | 606.25 |
| Incandescent and arc lamps | 4,431.20 |
| Electric wire and material | 3,721.04 |
| Fixtures | 2,009.77 |
| Iron and metal work | 16.74 |
| Hauling and expressage | 31.30 |
| Hardware | 237.69 |
| Nickel plating | 3.60 |
| Electric molding | 132.34 |
| Steam pipe, and fittings | 163.90 |
| Gas, and electric current | 5,803.04 |

| | |
|---|---|
| Tools, etc | $629.05 |
| Miscellaneous | 87.73 |
| Brickwork on boilers, etc | 567.54 |
| Reserved for unpaid bills | 13,238.40 |
| | 100,000.00 |
| Appropriated, sundry civil act approved June 25, 1910 | 100,000.00 |

ENGINE HOUSE AND SENATE AND HOUSE STABLES.

| | |
|---|---|
| Lumber | $60.72 |
| Paint, oil, and glass | 45.57 |
| Hardware | 16.42 |
| Pay rolls | 662.50 |
| Plumbing and plumbing material | 224.92 |
| Labor vouchers | 153.00 |
| Roofing and tin work | 75.97 |
| Repairing driveways | 215.00 |
| Reserved for unpaid bills | 45.90 |
| Total | 1,500.00 |
| Amount appropriated, sundry civil act approved June 25, 1910 | 1,500.00 |

REPAIRS TO COURTHOUSE, DISTRICT OF COLUMBIA.

| | |
|---|---|
| Lighting fixtures and material | $744.17 |
| Pay rolls | 563.45 |
| Labor vouchers | 773.50 |
| Lumber and millwork | 1,488.27 |
| Roofing tin and metal work | 88.96 |
| Plumbing and material | 2,022.66 |
| Brick and cement floors, etc | 2,291.49 |
| Paint, oil, and glass | 341.75 |
| Marble and stone work | 495.00 |
| Hardware | 14.23 |
| Plastering | 70.40 |
| Bronze and iron work | 34.55 |
| Painting, whitewashing, and material | 598.68 |
| Repairs to boilers | 471.01 |
| Reserved for unpaid bills | 1.88 |
| Total | 10,000.00 |
| Appropriated, sundry civil act approved June 25, 1910 | 10,000.00 |

COURT OF CLAIMS BUILDING, 1911.

| | | |
|---|---|---|
| Elevator | | $3,495.00 |
| Painting | | 336.00 |
| | | 3,831.00 |
| Appropriated: | | |
| Sundry civil act approved June 25, 1910 | $3,550.00 | |
| Deficiency act approved July 21, 1911 | 281.00 | |
| | | 3,831.00 |

Respectfully submitted.

Elliott Woods,
*Superintendent U. S. Capitol Building and Grounds.*

The Secretary of the Interior.

# REPORT OF THE ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

# REPORT OF THE ACTING SUPERINTENDENT OF THE YELLOWSTONE NATIONAL PARK.

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Department of the Interior,
Yellowstone National Park,
Office of Superintendent,
*Yellowstone Park, Wyo., October 14, 1911.*

Sir: I have the honor to submit annual report of the condition of affairs in and the management of the Yellowstone National Park, since October 1, 1910, to the present date.

The Yellowstone National Park, set aside by act of March 1, 1872 (secs. 2474 and 2475, R. S., 17 Stat., 32), is located in the States of Wyoming, Montana, and Idaho. It has an area of about 2,142,720 acres, and an average altitude of about 8,000 feet.

I arrived at Fort Yellowstone on September 26, 1910, with four troops and the machine-gun platoon comprising the Second Squadron, First Cavalry, and assumed the duties of acting superintendent of the park on September 30, relieving Maj. H. C. Benson, Fifth Cavalry, by whom I was advised in a general way as to the duties connected with the administration and protection of the park.

## TRAVEL.

The act of Congress appropriating funds for maintenance and repair of roads and bridges in the park specially prohibited the use of such funds for removing the snow from the roads for the purpose of opening them in advance of the time when they would be cleared by seasonal changes. The spring was late in opening up, and as a result, the tourists that came into the park on the first day of the season could not be sent over the continental divide from Upper Geyser Basin to Thumb, but had to be turned back to Norris and thence to the lake via the canyon and back over the same route, resulting in much disappointment and bitter complaint from some of them.

The road over Mount Washburn and through Dunraven Pass, which the department has contemplated making a part of the regular tour of the park, was not open for travel until July 22, and would not have been open until several days later had I not sent detachments of soldiers from Tower Falls Station to clear out the bowlders, slides, and fallen trees for a distance of 5 miles from Tower Falls, connecting with the crew of men employed under the Engineer Department working from the canyon side.

The aggregate number of persons making park trips during the season of 1911 was as follows:

*Travel during the season of 1911.*

| | | | |
|---|---|---|---|
| Yellowstone National Park Transportation Co., entering via northern entrance. | | | 5,590 |
| Monida & Yellowstone Stage Co., entering via western entrance | | | 5,659 |
| Others at hotels, traveling with private or Government transportation, foot travelers, bicyclers, etc | | | 499 |
| Total traveling with regular companies | | | 11,748 |
| Wylie Permanent Camping Co.: | | | |
| Entering via northern entrance | 2,389 | | |
| Entering via western entrance | 2,614 | | |
| | | 5,003 | |
| Other licensees of personally conducted camping parties | | 2,702 | |
| Total number camping, traveling with licensed transportation | | | 7,705 |
| Making park trips traveling with private transportation as "camping parties". | | | 3,358 |
| Total number making park trips | | | 22,811 |
| Number making short trips with special licensees | | | 243 |
| Grand total of travel season of 1911 | | | 23,054 |

Three thousand and forty-eight people took the boat trip across Yellowstone Lake, of which 1,690 were traveling with the Yellowstone Park Transportation Co., 679 with the Monida & Yellowstone Stage Co., 281 with the Wylie Permanent Camping Co., and the balance were with other licensees, private camping parties, employees at hotels and camps, and miscellaneous.

*Travel by the different entrances.*

| | |
|---|---|
| From the north, via Gardiner, Mont | 10,530 |
| From the west, via Yellowstone, Mont | 10,470 |
| From the south, via Jackson Hole | 490 |
| From the east, via Cody, Wyo | 1,524 |
| From the northeast, via the mining camp at Cooke, Mont. (Soda Butte entrance) | 40 |
| Total | 23,054 |

Travel via the western entrance has gradually increased from 1,777 during the season of 1899, to 10,470 in 1911. Travel from the eastern, or Cody entrance has also materially increased—from 310 in 1903, when the road was first opened, to 1,524 in 1911—but as this route passes over a high divide and the road can seldom be opened until in July, the season must necessarily be shorter than from the north and west entrances.

In addition to the Concord coaches, surreys, and other vehicles in use by the contract transportation companies, the Wylie Permanent Camping Co. had in use 98 passenger vehicles, and special season licenses were issued for movable camping parties aggregating 161 wagons and 227 saddle and pack animals, and for 7 wagons for special livery work. A list of concessionaires holding contracts for privileges in the Yellowstone Park, with rentals exacted therefor during the season of 1911, and usage tax paid during 1910 and 1911, is hereto appended.

## ROADS.

The following notes on the work done on roads and bridges were furnished by Capt. C. H. Knight, Corps of Engineers, United States Army, who is in charge of improvement work in the park:

Worn-out wooden bridges were replaced by steel ones as follows: Obsidian Creek Bridge, 36-foot plate girder; Gibbon River Bridge (5 miles south of Norris), two 50-foot steel spans; Madison River Bridge, two 80-foot steel spans; Heron Creek Bridge, 80-foot steel arch; Gibbon River Bridge (9 miles south of Norris), 65-foot steel span; Excelsior Geyser Bridge, two 50-foot steel spans; Riverside Geyser Bridge, 65-foot steel arch.

The four bridges between Mammoth Hot Springs and Gardiner were redecked.

A crew consisting of 5 men with 1 team worked during the months of February and March removing slides of earth and rock from the road in the Gardiner Canyon.

Two crews consisting of 2 overseers, 27 laborers, 10 teamsters with 11 teams worked during the months of April and May, grading and graveling the road between Gardiner and Golden Gate, smoothing up the road at Mammoth Hot Springs and the road between Mammoth Hot Springs and Tower Falls. One hundred and seventy-five feet of concrete retaining wall was put in along the Gardiner River about 3½ miles from Mammoth Hot Springs.

The road between Golden Gate and Norris was graded and 16 miles thereof regraveled. From Norris to the Grand Canyon the road was graded, a number of culverts and one bridge repaired, and numerous washouts refilled. About 1,800 feet of new road, to connect the old road with the new Canyon Hotel and with the Mount Washburn Road, was constructed. Between the Thumb lunch station and the upper basin, a number of washouts were repaired and one 25-foot log bridge constructed. This portion of the road was partly graded and graveled. The road between the Grand Canyon and Lake Hotel was graded and partly regraveled. From Yellowstone Station to Wylie lunch station, the road was graded, partly regraveled, and several hundred feet of the narrow road widened. From Norris to the upper basin, the road was graded and repaired. The road from the Thumb Station to the Lake Hotel and from the Lake Hotel to the east boundary was repaired, including the construction of a number of small timber bridges.

Twenty sprinkler wagons were repaired and distributed to the various camps in the park, and sprinkling was begun on 95 miles of road. A party of 7 men with 2 teams worked until August 6, repairing water tanks and changing a number of "pumping" stations to "overshot" stations.

A crew consisting of 1 overseer, 11 laborers, and 3 teams worked during the months of June and July on the east (Cody) road in the Shoshone National Forest, clearing the road of slides and fallen trees, and repairing washouts, bridges, and culverts.

In July, work was begun on the road from the Canyon Hotel to the top of Mount Washburn and through Dunraven Pass, which included the construction of two timber bridges and two culverts.

A crew consisting of 1 overseer, 10 laborers, and 4 teams worked from July 10 to August 26 on the south road in the Teton and Bonneville National Forests.

Sprinkling the roads was discontinued the evening of August 6, except at Mammoth Hot Springs, on account of lack of funds.

The lawns at Mammoth Hot Springs were maintained throughout the season.

A number of old bridges were redecked and repaired, and a number of new culverts were put in.

At the end of August practically all improvement work, excepting the steel bridge work, was suspended on account of the appropriation being exhausted.

The attention of the department was called to the exhausting of the appropriation for park improvements as a result of which sprinkling of the roads was stopped, and request was made for an allotment of $5,500 for labor and teams to sprinkle the roads during August and September. The department at once submitted the question for the consideration of the Comptroller of the Treasury, who, for the reasons set forth in an opinion dated August 12, 1911 (copy of which is hereto appended), held that the revenues of the park could not be lawfully used for sprinkling the roads in the reservation.

In May of 1910 permission was granted by the department to the county commissioners of Gallatin County, Mont., to survey and construct a wagon road along the northwestern border of the Yellowstone National Park and through a portion of that reservation to afford more convenient intercourse with the southern portion of Gallatin County, and to permit the residents thereof to conveniently reach the county seat for the transaction of business, upon the condition that the county would bear the entire expense of the construction of the road and that after completion it should be regarded as a public road and the use thereof accorded to all persons strictly observing the rules and regulations for the government of the park. This road was completed and ready for travel during the year, and lessened the distance from Bozeman to Yellowstone very materially. The road by the new route is 75 miles, as against about 150 miles for the old route through Madison County. The length of the road is 31.1 miles, and the cost thereof is reported as being over $9,700.

## FISH.

The subhatchery located on the shore of Yellowstone Lake near Thumb and maintained by the Department of Commerce and Labor was run this season from the main hatchery at Bozeman, Mont., instead of from Spearfish, S. Dak., as heretofore. Mr. H. D. Dean, the superintendent in charge, furnished me with the following memorandum of the operations of this subhatchery for the season of 1911:

The work of collecting the eggs of the black-spotted trout was unusually successful—so much so that it was necessary to suspend operations of collecting eggs for lack of room to care for them, although every bit of material available was worked up into troughs, trays, etc.; 4,000 trout were taken in one haul with a 50-foot seine in Clear Creek, and in other instances as many as 2,500 were secured at a haul. A total of 20,682,000 eggs were collected at this subhatchery, and in addition, one of the men was sent to Trout Lake near Soda Butte for two weeks, where he succeeded in collecting about 845,000 eggs, which were immediately shipped to the Bozeman hatchery to be taken care of. In all, 16,866,000 black-spotted eggs were sent out of the park, of which 5,345,000 were shipped green and the balance were eyed at the hatchery before shipment.

The balance of the eggs taken in the park were eyed and then planted in the small streams flowing into Yellowstone Lake.

Ten thousand fingerling brook trout (*fontinalis*) were received from the Bozeman hatchery on August 29 and planted in Glen Creek, and 100,000 black-spotted fry (*salmo mykiss*) were received from the same source on August 29 and planted in Lava Creek, a branch of the Gardiner River. Both of these streams are near the road and convenient for fishing, and therefore require frequent restocking.

## WILD ANIMALS.

### ANTELOPE.

The experiment of capturing antelope in the park and transferring them by express to the national bison preserve in Montana and to the Wichita game preserve in Oklahoma, for which funds were supplied by the Boone and Crockett Club, was quite successful. Twelve (4 bucks and 8 does) were captured and sent to the Montana preserve, and 11 (4 bucks and 7 does), to the Wichita preserve. But 3 were lost in making the capture and 3 injured themselves en route to such an extent that they did not live long after arrival at their destination. It was found that the does were quieter and easier to handle than the bucks. The capture was made near the stacks of hay along the north line near Gardiner, during December and the early part of January, and naturally disturbed the herd more or less, and for some time afterwards it took considerable effort to get them back to their winter range and used to eating hay. In February 450 were counted after they had quieted down and recovered from the fright incident to the capture of those shipped away. As yet this fall but few have come down from the mountains, and it is therefore impossible to tell much about their condition until later. An unusually large number of elk that wintered along the north line interfered seriously with feeding the antelope, deer, and mountain sheep, the hay not being sufficient in quantity to feed the large herds of elk, which also constantly broke down the fence along the north line, rendering it difficult to keep the antelope inside the park. On 11 different occasions during December, January, and February it was necessary to send detachments of troopers of from 10 to 30 men each to assist the scouts in herding them back into the park. This fence is not in very good condition, and it is contemplated repairing it for this winter at as little expense as possible, and have it replaced by a higher and stronger fence, or by rebuilding and adding to the present one when sufficient funds are available for the purpose.

The alfalfa on the field near Gardiner, which has produced hay for the antelope, mountain sheep, and deer, was run out by foxtail, weeds, etc., and was plowed up last spring with a view to restocking to alfalfa. It requires at least two years' plowing and cultivating to put the land in proper shape for reseeding, and as an experiment the sod ground was sowed to spring wheat, which was cut and stacked for use as hay. The season chanced to be a very favorable one, and the results have therefore been quite satisfactory, about 80 tons of wheat hay having been cut and put in stack for the game for the winter.

## DEER.

Practically all of the deer that remain in the park during the winter are found within a few miles of Fort Yellowstone, where they are fed hay, and both white-tailed and black-tailed deer become very tame, many of them eating from the hand. About 1,000 black-tailed deer were counted last winter, and while many of them died (probably at least 100 in this vicinity) the loss was not considered excessive in view of the fact that the winter seemed to be a particularly hard one on the game. The white-tailed deer, of which there has never been above 100, wintered well and seem to be holding their own and probably increasing slowly.

## ELK.

Elk in certain portions of the park are very numerous, and are numbered by thousands both in winter and summer. Last winter the deep snows drove them down in large herds from the latter part of November on, and many of them drifted into Montana, where they did much damage to haystacks, fields, and fences on the ranches near the park. Another result was to make good hunting in Montana along the park line during the closing days of the open season. At the last session the Montana State Legislature set aside a strip several miles in width and extending along the park line from where it crosses the Yellowstone River, west to the northwest corner, thence south along the west line for about 7 miles, as a game preserve, and this will be of great assistance in protecting the game in the park.

## MOOSE.

Moose are frequently seen in the southeast, southwest, and northwest portions of the park, but usually in wild and unfrequented spots and never near human habitation.

## BUFFALO.

### WILD HERD.

The wild herd has been seen several times, usually in the Pelican Creek Valley. The largest number seen at any one time was 27. A patrol reported having seen 8 along the road, about 7 miles west of Thumb Station, on August 12.

### FENCED HERD.

This herd is thriving and now consists of 147 head. On the date of last report there were 121 head—61 males and 60 females. In October, 1910, one 4-year-old bull was sold to B. A. Grant, of Long Beach, Cal., for $500, delivered on board the cars at Gardiner, Mont. Mr. Grant took him to his home for exhibition purposes. On August 22, 1911, one of last year's male calves was gored so severely by one of the old bulls that it had to be killed. During the spring and summer 29 calves were born, and on September 28 one of these, a female, was found with a broken leg and had to be killed. The heads, skeletons, and robes of those that had to be killed, together with those of the yearling calf that died September 1, 1910 (see annual report 1910), were shipped to the National Museum, Washington, D. C., for use as mounted specimens.

Fifteen bulls were brought in from the Lamar Valley to Mammoth Hot Springs, where they were kept under fence for exhibition during the tourist season, and were, as usual, one of the favorite sights for the tourists.

About 200 tons of hay have been cut and stacked for use of this herd during the winter. During the summer and late into the fall these buffalo are herded in the open during the day and returned to the pasture for the night.

The 40 acres of meadow land that was plowed up in the spring of 1909 and stocked with timothy produced about 80 tons of excellent hay this season, which is at least double the amount it would have produced as wild land. An irrigation system to cover this and several hundred acres adjoining was constructed last spring, and additional meadow land will be taken up as rapidly as funds permit, in order to secure plenty of hay for the increasing herd.

### BEAR.

The bears seem to be increasing—at least they have been very plentiful during the past summer around the hotels and camps. They are very tame. During the summer two grizzlies and three black bears, becoming dangerous to life and property, were killed. In one or two instances men who have become too bold with bear have been attacked and severely injured, usually by a mother bear that thought she was defending her cubs, but investigation of cases of this kind usually result in a conclusion that the bear is not entirely to blame.

During the summer there have been captured and shipped alive to public parks, under authority of the department, the following bears: A mother grizzly with a pair of cubs, and a male grizzly to the Zoological Society of Philadelphia; a pair of grizzlies (male and female) to Riverdale Zoological Gardens, Toronto, Canada; a mother grizzly with a pair of cubs and a male grizzly to Swope Park Zoological Gardens, at Kansas City, Mo.; and a pair of black bears (male and female) to the city park at West Bend, Iowa. All of these shipments were received without accident and were reported in each case as very satisfactory. The expenses of capturing and shipping were borne by the parks to which the animals were sent.

### COYOTES.

Coyotes are plentiful, and doubtless do much damage to other game. One hundred and twenty-nine have been killed by scouts, noncommissioned officers in charge of stations, and others who were specially authorized to kill them.

### MOUNTAIN SHEEP.

The small flock of mountain sheep that winters on the slopes of Mount Everts and in Gardiner Canyon seems to be thriving. Hay is fed to these animals in winter, when they become very tame and are seen at close quarters. As yet they have not come down for the winter, but several small bands have been seen in the mountains, accompanied by a number of lambs, which indicates a fair increase.

In addition to the animals mentioned above, mountain lions, lynx, otter, foxes, badgers, beaver, martin, mink, muskrat, and different varieties of rabbits, squirrels, and chipmunks are found. Beavers are particularly plentiful and are found in nearly every stream in the park.

More than 70 species of birds, including pelicans, ducks, geese, swan, and other waterfowl inhabit the park during the summer, and some of them, including some of the waterfowl, remain during the winter. Eight young pelicans that were captured at Pelican Roost in Yellowstone Lake and held and fed during the summer were shipped by express to the National Zoological Park at Washington, D. C., on September 27, where they arrived in good condition on October 1.

## PROTECTION OF GAME.

Many of the former favorite hunting grounds adjoining the park in the States of Montana and Wyoming have been included in strips set aside by these States as game preserves. This fact, together with the hearty cooperation of the officers of the game and fish commissions of the adjoining States, has been of great importance and assistance in protecting the game of the park from the depredations of poachers.

## TRAILS.

Late last fall 25 miles of new trails or fire lanes were built in the southeast corner of the park, and during the present summer similar passageways were built from Snake River Station, on the south line, west to near the southwest corner, thence north along the west boundary line and northeast via Summit Lake to Upper Basin. These, together with such trails as have been opened up by troops, enable scouts and patrols to get about much easier and quicker and are of great importance in the protection of game and of forests from fire.

## FOREST FIRES.

Owing to the constant vigilance of patrols and strict enforcement of the regulations relative to camp fires, there has been no forest fire of any importance during the summer. In several instances camp fires were left burning, but these were extinguished by the patrols themselves, or the guilty parties were marched back to put them out.

## TELEPHONE LINES.

The War Department has extended its system of telephone lines from Snake River Station west to the new Bechler Station in the southwest corner, about 30 miles. Also from headquarters to the new Gallatin Station in the northwest corner of the park, about 31 miles.

The new Canyon Hotel has been completed during the year and is all that could be desired in a hotel in the park.

A convention of park superintendents and others interested in the national parks was held in the park from September 10 to 13 to discuss park problems and to arrive at such uniform methods of management as are applicable to the different national parks. Those in attendance were unanimously in favor of a bureau of national parks.

Very respectfully,
L. M. Brett,
*Lieutenant Colonel, First Cavalry,*
*Acting Superintendent.*

The Secretary of the Interior.

# APPENDIX.

## RULES AND REGULATIONS.

### Regulations of May 27, 1911.

The following rules and regulations for the government of the Yellowstone National Park are hereby established and made public, pursuant to authority conferred by section 2475, Revised Statutes, United States, and the act of Congress approved May 7, 1894:

1. It is forbidden to remove or injure the sediments or incrustations around the geysers, hot springs, or steam vents; or to deface the same by written inscriptions or otherwise; or to throw any substance into the springs or geyser vents; or to injure or disturb, in any manner, or to carry off any of the mineral deposits, specimens, natural curiosities, or wonders within the park.

2. It is forbidden to ride or drive upon any of the geyser or hot spring formations, or to turn stock loose to graze in their vicinity.

3. It is forbidden to cut or injure any growing timber. Camping parties will be allowed to use dead or fallen timber for fuel. When felling timber for fuel, or for building purposes when duly authorized, stumps must not be left higher than 12 inches from the ground.

4. Fires shall be lighted only when necessary and completely extinguished when not longer required. The utmost care must be exercised at all times to avoid setting fire to the timber and grass.

5. Hunting or killing, wounding, or capturing any bird or wild animal, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed in the park under other circumstances than prescribed above, will be forfeited to the United States, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation, and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof. On arrival at the first station of the park guard parties having firearms, traps, nets, seines, or explosives will turn them over to the sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park.

6. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for purposes of merchandise or profit is forbidden. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

7. No person will be permitted to reside permanently or to engage in any business in the park without permission, in writing, from the

Department of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.

8. The herding or grazing of loose stock or cattle of any kind within the park, as well as the driving of such stock or cattle over the roads of the park, is strictly forbidden, except in such cases where authority therefor is granted by the Secretary of the Interior. It is forbidden to cut hay within the boundaries of the park excepting for the use of the wild game, and such other purposes as may be authorized by the Secretary of the Interior or the park superintendent.

9. No drinking saloon or bar room will be permitted within the limits of the park.

10. Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public, upon buildings on leased ground.

11. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the park, and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

12. It is forbidden to carve or write names or other things on any of the mileposts or signboards, or any of the platforms, seats, railings, steps, or any structures or any tree in the park.

Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine as provided by the act of Congress approved May 7, 1894, "to protect the birds and animals in Yellowstone National Park and to punish crimes in said park, and for other purposes," of not more than $1,000, or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

### Instructions of June 6, 1911.

1. The feeding, interference with, or molestation of any bear or other wild animal in the park in any way by any person not authorized by the superintendent is prohibited.

2. *Fires.*—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. Where fires are built in the neighborhood of decayed logs, particular attention must be directed to the extinguishment of fires in the decaying mold. Fire may be extinguished where water is not available by a complete covering of earth, well packed down.

Especial care should be taken that no lighted match, cigar, or cigarette is dropped in any grass, twigs, leaves, or tree mold.

3. *Camps.*—No camp will be made at a less distance than 100 feet from any traveled road. Blankets, clothing, hammocks, or any other article liable to frighten teams must not be hung at a nearer distance than this to the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Many successive parties camp on the same sites during the season, and camp grounds must be thoroughly cleaned before they are abandoned. Tin cans must be flattened and, with bottles, cast-off clothing, and all other débris, must be deposited in a pit provided for the purpose. When camps are made in unusual places where pits may not be provided all refuse must be hidden where it will not be offensive to the eye.

4. *Bicycles.*—The greatest care must be exercised by persons using bicycles. On meeting a team the rider must stop and stand at side of road between the bicycle and the team—the outer side of the road if on a grade or curve. In passing a team from the rear the rider should learn from the driver if his horses are liable to frighten, in which case the driver should halt and the rider dismount and walk past, keeping between the bicycle and the team.

5. *Fishing.*—All fish less than 8 inches in length should at once be returned to the water with the least damage possible to the fish. No one person shall catch more than 20 fish in one day.

6. *Dogs.*—Dogs are not permitted in the park.

7. *Grazing animals.*—Only animals actually in use for purposes of transportation through the park may be grazed in the vicinity of the camps. They will not be allowed to run over any of the formations, nor near to any of the geysers or hot springs; neither will they be allowed to run loose within 100 feet of the roads.

8. *Formations.*—No person will be allowed on any formations after sunset without a guide.

9. *Hotels.*—All tourists traveling with the authorized transportation companies, whether holding hotel coupons or paying cash, are allowed the privilege of extending their visit in the park at any of the hotels without extra charge for transportation. However, 24 hours' notice must be given to the managers of the transportation companies for reservations in other coaches.

10. *Driving on roads of park.*—(*a*) Drivers of vehicles of any description, when overtaken by other vehicles traveling at a faster rate of speed, shall, if requested to do so, turn out and give the latter free and unobstructed passageway.

(*b*) Vehicles in passing each other must give full half of the roadway. This applies to freight outfits as well as any other.

(*c*) Racing on the park roads is strictly prohibited.

(*d*) Freight, baggage, and heavy camping outfits on sidehill grades throughout the park will take the outer side of the road while being passed by passenger vehicles in either direction.

(*e*) In making a temporary halt on the road for any purpose all teams and vehicles will be pulled to one side of the road far enough to leave a free and unobstructed passageway. No stops on the road for luncheon or for camp purposes will be permitted.

(*f*) In rounding sharp curves on the roads, like that in the Golden Gate Canyon, where the view ahead is completely cut off, drivers will slow down to a walk. Traveling at night is prohibited except in cases of emergency.

(*g*) Transportation companies, freight and wood contractors, and all other parties and persons using the park roads will be held liable for violation of these instructions.

(*h*) Pack trains will be required to follow trails whenever practicable. During the tourist season, when traveling on the road and vehicles carrying passengers are met, or such vehicles overtake pack trains, the pack train must move off the road not less than 100 feet and await the passage of the vehicle.

(*i*) During the tourist season pack animals, loose animals, or saddle horses, except those ridden by duly authorized persons on patrol or other public duties, are not permitted on the coach road between Gardiner and Fort Yellowstone.

(*k*) Riding at a gait faster than a slow trot on the plateaus near the hotels where tourists and other persons are accustomed to walk is prohibited.

(*l*) Mounted men, on meeting a passenger team on a grade, will halt on the outer side until the team passes. When approaching a passenger team from the rear, warning must be given, and no faster gait will be taken than is necessary to make the passage, and if on a grade the passage will be on the outer side. A passenger team must not be passed on a dangerous grade.

(*m*) All wagons used in hauling heavy freight over the park roads must have tires not less than 4 inches in width. This order does not apply to express freight hauled in light spring wagons with single teams.

11. *Liquors.*—All beer, wine, liquors, whisky, etc., brought into the Yellowstone National Park via Gardiner to be carried over the roads through the reservation to Cooke City, must be in sealed containers or packages, which must not be broken in transit.

12. *Miscellaneous.*—Automobiles are not permitted in the park.

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

13. *Penalty.*—The penalty for disregard of these instructions is summary ejection from the park.

## Notices.

(*a*) *Boat trip on Yellowstone Lake.*—The excursion boat on Yellowstone Lake plying between the Lake Hotel and the Thumb Lunch Station at the West Bay is not a part of the regular transportation of the park, and an extra charge is made by the boat company for this service.

(*b*) *Side trips in park.*—Information relative to side trips in the park and the cost thereof can be procured from those authorized to transport passengers through or to provide for camping parties in the park; also at the office of the superintendent.

(*c*) All complaints by tourists and others as to service, etc., rendered in the reservation should be made to the superintendent in writing.

## CONCESSIONS.

*Concessionaires holding contracts for privileges in the Yellowstone Park, with rentals exacted therefor during the season of 1911, together with usage tax paid during the seasons of 1910 and 1911.*

| | Present annual rental. |
|---|---|
| **Yellowstone Park Hotel Co.:** | |
| Operation of hotels in the park under leases dated June 13, 1907, running for 20 years from March 20, 1905, covering sites aggregating 20 acres; rental $300 per annum first 5 years, $20 per acre per annum ($400) thereafter. Lease dated November 5, 1907, for 18 years from March 20, 1907, covering sites aggregating 9½ acres, rental $15 per acre per annum to March 20, 1910, and $20 per acre per annum thereafter. Leases expire March 20, 1925. | |
| Total acreage of sites occupied, 29¼ acres, at $20 | $585.00 |

Hotels and lunch stations with accommodations for guests at each as follows:

| | |
|---|---|
| Mammoth Hot Springs Hotel | 350 |
| Cottage Hotel | 80 |
| Norris Station | 25 |
| Fountain Hotel | 350 |
| Old Faithful Inn | 400 |
| Thumb Station, lunch only. | |
| Lake Hotel | 450 |
| Canyon Hotel | 350 |

| | Present annual rental. |
|---|---|
| **Yellowstone Park Transportation Co:** | |
| Operation of transportation and stage lines in the park. Leases as follows: | |
| June 13, 1907, granting transportation privilege, 20 years, from March 31, 1905. | |
| October 18, 1907, for 18 years, from March 31, 1907, of sites aggregating 20.95 acres in connection with privileges. Rental $40 per acre per annum ($838). | |
| May 22, 1908, for 18 years, from March 31, 1907, covering 0.11 acre at Mammoth Hot Springs (addition to 9.78 acres under lease October 18, 1907, thereat), at $40 per acre per annum ($4.40). | |
| December 31, 1908, 16 years, from March 31, 1909, for 7.1 acres at Grand Canyon, at $40 per acre per annum ($284). Leases expire March 31, 1925. | |
| Total acreage, 28.16 acres, at $40 per acre | 1,126.40 |
| **Monida & Yellowstone Stage Co.:** | |
| Operation of transportation and stage lines in the park. Lease dated March 31, 1906, running for 10 years, covering sites aggregating 11 acres. Rental $25 per acre. April 27, 1910, rate increased to $40 per acre per annum. Lease expires March 31, 1916 | 440.00 |
| **Wylie Permanent Camping Co.:** | |
| Privilege of transporting passengers through the park and maintaining permament camps in connection therewith. Lease dated May 4, 1906, running 10 years from March 31, 1906. Rental, $10 per wagon (no less than 50 wagons to be used). Season of 1911, 98 wagons used, at $10 each. Lease expires March 31, 1916 | 980.00 |
| **T. E. Hofer Boat Co.:** | |
| Privilege of operating system of pleasure and fishing boats on Yellowstone Lake, renting and selling fishing tackle, etc.: | |
| Lease November 12, 1907, for 10 years, covering boat privilege. Rental, $100 per annum. | |
| Lease January 30, 1909, for 9 years from November 12, 1908, covering 2-acre site on shore of lake, at $40 per acre per annum; use of docks and ways, $270 per annum; privilege of operating store for selling grain, hay, and other supplies, $50 per annum. Leases expire November 12, 1917. | |
| Total charge per annum under above leases | 500.00 |

| | Present annual rental. |
|---|---|
| Henderson & Lyall: | |
| Privilege for store, dwelling, and post office. Lease dated August 7, 1905. Yearly rental, $100 per annum (lease runs for period of 10 years). Lease expires August 7, 1915 | $100.00 |
| Pryor & Pryor: | |
| Privilege for dwelling and store, including soda fountain, selling beverages, etc. Lease dated August 26, 1908; runs for period of 8 years from April 3, 1908; expires April 3, 1916. Yearly rental per annum, $50. Rental is readjustable. Lease covers plat 13,800 square feet, occupied by dwelling and store | 50.00 |
| Henry E. Klamer: | |
| Lease of plat of ground (2 acres) at Upper Geyser Basin for dwelling and general store, dated January 31, 1908, for period of 10 years from June 1, 1907. Rental, $100 per annum. Privilege reserved in lease to readjust rental at any time or charging for store privilege | 100.00 |
| F. Jay Haynes: | |
| Lease dated June 1, 1904, for 1 acre of ground at Upper Geyser Basin, for period of 10 years from March 31, 1904, for photographic privilege. Yearly rental, $30 per annum. Lease dated June 1, 1904, for sixty-four one-hundredths of an acre at Mammoth Hot Springs; runs for period of 10 years from March 31, 1904; photographic privilege. Yearly rental, $30. Leases expire March 31, 1914 | 60.00 |
| Total of rentals under leases | 3,941.40 |

## COMPTROLLER'S DECISION RE USE OF REVENUES FOR ROAD SPRINKLING.

TREASURY DEPARTMENT,
OFFICE OF THE COMPTROLLER OF THE TREASURY,
*Washington, August 12, 1911.*

SIR: I am in receipt of your letter of August 7, 1911, as follows:

> On August 3, 1911, Maj. L. M. Brett, acting superintendent of the Yellowstone National Park, wired the department as follows:
>
> "Engineer officer reports appropriation maintenance and repair improvements exhausted except sufficient to care for property and run office. Requires $5,500 for labor and teams to sprinkle roads remainder August. Recommend this amount be allotted from park revenues."
>
> The department replied on August 4, saying:
>
> "Replying your telegram 3d, park revenues can not be used sprinkling system while any part appropriation park improvement under control War Department is actually unexpended. Similar request decided adversely August 22, 1910. See also opinion Comptroller, September 16, 1910, copy in your office."
>
> The department is now in receipt of a telegram from the acting superintendent, in which he says:
>
> "The engineer's office has ordered in all road and sprinkling crews. Funds for same exhausted. All work discontinued except on bridges contracted for. Unsatisfactory condition with still six weeks tourist season."
>
> You are requested to advise this department, at as early a date as practicable, whether, in your judgment, this department has authority to authorize the acting superintendent to use so much of the revenues derived from the park as may be necessary to sprinkle the roads during the remainder of the present season. * * *

The fund in question consists of revenues derived from the management of the park under section 2475 of the Revised Statutes of the United States and acts of Congress amendatory thereof, and is to be expended under the direction of the Secretary of the Interior.

The act of March 4, 1911 (36 Stat., 1363) making appropriations for sundry civil expenses of the Government for the fiscal year ending June 30, 1912, provides (p. 1402):

> Yellowstone National Park: For maintenance and repair of improvements, * * * seventy thousand dollars, to be expended by and under the direction of the Secretary of War * * *.

The same act, under the heading "Miscellaneous objects, Department of the Interior," provides (p. 1420):

> Yellowstone National Park: For the administration and protection of the Yellowstone National Park, five thousand five hundred dollars.

It has been held that the revenues derived from the management of the park and the appropriation for "administration and protection" are available for the same purpose and are to be used in common. (8 Comp. Dec., 556; 7 id., 161.)

It thus appears that there are two funds available for use in connection with the Yellowstone National Park, viz, one for maintenance and repair of improvements, to be expended under the direction of the Secretary of War, and one for administration and protection (composed of the small annual appropriation, supra, and the revenues of the park), to be expended under the direction of the Secretary of the Interior.

While either of these funds might in the absence of the other be used for the purpose of sprinkling the roads, I think it is beyond question that the appropriation under the control of the Secretary of War more specifically provides for that object, these roads being "improvements" and sprinkling them a "repair" or "maintenance." It also appears that said appropriation has heretofore been used for that object without question.

It is a well-established rule in the construction of appropriation acts that where a particular appropriation makes more specific provision for a particular object than is made by another appropriation, it is exclusively applicable thereto, although if such more specific provision had not been made the other appropriation would have been applicable. This rule also applies where the appropriation making the more specific provision is insufficient or exhausted. (1 Comp. Dec., 492; 3 id., 70, 353; 10 id., 655; 43 MS. Comp. Dec., 597, 599, Nov. 9, 1907.)

I have therefore to advise you that the revenues derived from the park can not lawfully be used for the purpose mentioned in your letter.

Respectfully,

L. P. MITCHELL,
*Assistant Comptroller.*

The SECRETARY OF THE INTERIOR.

The Eckert Lithographing Compa

# REPORT OF THE ACTING SUPERINTENDENT OF THE YOSEMITE NATIONAL PARK.

# REPORT OF THE ACTING SUPERINTENDENT OF THE YOSEMITE NATIONAL PARK.

YOSEMITE NATIONAL PARK,
OFFICE OF THE SUPERINTENDENT,
*Yosemite, Cal., October 15, 1911.*

SIR: I have the honer to submit the following report of conditions and administration in the Yosemite National Park during the season of 1911:

## GENERAL STATEMENT.

This park is situated in Tuolumne, Mariposa, and Mono Counties, Cal., and originally had an area of about 1,512 square miles. The lands embraced therein were set aside by act of Congress approved October 1, 1890 (26 Stat., 650), and were placed under the supervision of the Secretary of the Interior. By the act of February 7, 1905 (33 Stat., 702), and the joint resolution of June 11, 1906 (34 Stat., 831), the boundaries were changed, excluding a total of 555.94 square miles therefrom and including a total of 168.35 square miles not previously within the reservation, making the present area of 1,124.41 square miles, or 719,622.40 acres. The second change in boundaries included the recession of Yosemite Valley and Mariposa Big Tree Grove to the Federal Government.

The Yosemite Valley is open to travel all the year round, and, while it is impracticable because of the snow to ascend any of the trails up to the rim of the valley, the principal roads on the floor of the valley are passable.

Troops D and K, First Cavalry, that had been on duty in the park during the season of 1910, were withdrawn on November 1, 1910, and on December 6, 1910, I returned to my station at the Presidio of San Francisco, leaving Mr. Gabriel Sovulewski, the supervisor, in immediate charge of the park.

The weather during the winter was severe. The snow and rainfall was unusually heavy and continued later than usual into the spring. On account of the heavy snowfall, the road from Yosemite Valley to Wawona was not open for stage travel until April 21, 1911, nearly one month later than the previous spring.

On April 18, 1911, I arrived in the park to remain for the season, and on May 22, 1911, Troops C and D, First Cavalry, arrived in Yosemite Valley for the usual protection duty.

The troops were late in reaching the park because they had to be brought from the Mexican border, where they had been on duty for several months.

As soon as practicable, detachments were stationed at Wawona, the Mariposa Big Tree Grove, Crane Flat, Merced Big Trees, Aspen Valley, Hog Ranch, Hetch Hetchy Valley, Lake Eleanor, Buck Creek, and Soda Springs, and a district was assigned to each detachment, which was provided with written instructions and a schedule of patrols to be made in its district. The authorized strength of each of the troops assigned to duty in the park having been increased by the War Department to 75 men each, and Troop C having had no previous service in the park, most of the men were unacquainted with their duties and with the geography of the park, but they were eager to learn and deserve commendation for zealous and faithful service. There were only three line officers with these two troops, a number utterly inadequate for efficiency, and more officers were repeatedly asked for, but were not available.

## GRAZING.

No sheep or stock have been herded through the park, and there has been much less trouble with cattle and friction with cattle owners on the west side than in previous years. The few cattle that drifted in from the forest reserve on the west side were quickly removed, but the owners were nevertheless reported to the forest supervisor for violation of the conditions of their grazing permits.

## FIRES.

It is gratifying to be able to report that there have been no serious forest fires in the park this season. The few that occurred were discovered before they had spread and were promptly extinguished.

## GAME.

The deer, bear, grouse, and quail continue to increase. Many coyotes were destroyed last winter by poison after the bears went into hibernation.

The measures adopted for driving the bears out of Yosemite Valley proved in a great degree successful, and but little annoyance to campers was caused by them this season.

## FISH.

Thirty-two cans containing about 62,000 Loch Leven, Rainbow, and Eastern Brook trout were received July 20 at El Portal from the California fish and game commission, Sisson hatchery, and during that night 18 cans were planted in the Merced River between the park boundary and Happy Isles, 4 cans in Bridal Veil Creek below the falls, 2 cans in Yosemite Creek below the falls, and 8 cans in the Merced in Little Yosemite Valley.

Trout were also transplanted from nearby streams to Dorothy, Mary, and Tilden Lakes, in the extreme northern part of the park. Some trout were placed also in Miller Lake by the Sierra Club.

## FENCES.

The recommendation of previous years that the western boundary be fenced is not renewed, as it is understood that an arrangement is in progress between the Forest Service and the cattle owners on that side to build a fence at their joint expense in the forest reserve, near the west park boundary in order to prevent the trespassing of cattle on the park lands.

The material for a fence around the big tree, "Grizzly Giant," has been purchased and will be erected in the near future. The barbed-wire fence around the Mariposa Big Tree Grove has not been kept in repair this season in view of the contemplated removal of all dead timber and other inflammable material from the grove. The barbed-wire fence is unsatisfactory and should be replaced by a wire mesh fence after the dead timber is cleared out of the grove.

## PATENTED LANDS.

The urgent recommendations of previous years that the Government extinguish the title to all patented lands in the park is renewed.

There are approximately 20,000 acres of these lands, consisting of timber claims and a few claims that were taken up under the homestead act and were never occupied as homesteads, but simply used as a pretext for bringing in stock or cattle to stray upon the park lands.

There are no persons now living on patented lands within the limits of the park, except Mr. Kibby, at Lake Eleanor.

The timber claims are valuable and are becoming more so every year. Some of the finest sugar pine timber in California lies within the park along the road from Wawona to Chinquapin, and the Yosemite Lumber Co. is now building a logging railroad from El Portal to the park boundary near Chinquapin with the view of cutting the timber from 6,000 acres of land that it claims within the park near Alder Creek. The work of denudation in that locality is imminent, and this is what will happen to the timber on all the patented lands in the park in a short time unless they are purchased by the Government. This matter demands urgent attention and should no longer be neglected. It would be greatly to the interests of the Government to extinguish all private claims within the park.

The necessity of preserving the forest in this portion of the park and of reducing the number of private claims to such an extent as would justify the Federal Government in purchasing the remaining claims was one of the main points which caused the Yosemite Commission of 1904 to recommend the reduction of the area of the park.

That commission, as has every other person who has been charged with the welfare of the park or with making any recommendations in regard to it, recommended that the Government immediately purchase and extinguish all private rights.

## TELEPHONE SERVICE.

The telephone system connecting all the soldier outposts with the superintendent's office was promptly repaired and placed in operation by the troops, much facilitating the administration and protection of the park. The Pacific Telephone & Telegraph Co., by permission of the department, operates its lines from Yosemite Valley to the outside world by way of El Portal, on condition that all Government messages, telephone or telegraph, shall be transmitted free.

## ROADS.

There are about 141 miles of road in the park, the Coulterville road, 19 miles, the Big Oak Flat road, 10 miles, the Wawona-Glacier Point-Yosemite Valley road, 32 miles, the Tioga road, 45 miles, and the Government roads, about 35 miles, the latter comprising the roads on the floor of Yosemite Valley and the portion of the Yosemite Valley-El Portal road lying within the park.

The Big Oak Flat, the Wawona-Glacier Point-Yosemite Valley, and the Tioga roads are toll roads. The status of the Coulterville road is not definitely known, recent information being to the effect that the franchise of that road has been extinguished. Full information about these toll roads is contained in the Report of the Yosemite Park Commissioners, Senate Document No. 34. Fifty-eighth Congress, third session.

## GOVERNMENT ROADS.

The Yosemite Valley-El Portal road is the main highway into the park. The sprinkling system installed on it last season was extended by putting in more water supply stations, and the dust nuisance was completely eliminated. The portion of this road between Pohono Bridge and the park boundary, about 10 miles, is still rocky, narrow, and tortuous, and it should be widened, straightened, regulated in grade, and metalled.

Work was resumed on the improvement of that portion of the road on the south side of the Merced River between El Capitan Bridge and Yosemite village and 3,145 feet have been completed, with work still in progress.

The portion of the Wawona road that belongs to the Government should be improved and sprinkled, and all the roads on the floor of the valley should be metalled, parts of them being relocated in order to follow more attractive routes, and the road between the village and Happy Isles, on the south side of the river, should be metalled and sprinkled first, because of the preponderance of travel over it.

## TRAILS.

The new trail from above Mirror Lake to Lake Tenaya has been completed at a total cost of $6,461.43. The trip from Yosemite Valley to Lake Tenaya over this trail is attractive and the trail was much traveled this season.

In addition to the heavy wear and tear of the travel on all the old trails leading up from the floor to the rim of Yosemite Valley, they were all badly washed out by the heavy floods of the spring and early summer. They were repaired and maintained in good condition during the season.

The heavy floods also badly damaged nearly all the trails exterior to Yosemite Valley, and a working party is now making repairs on the Hog Ranch-Hetch Hetchy-Lake Eleanor trail which was completely washed away in many places.

Because of the heavy snowfall of the previous winter, the higher altitudes of the park were inaccessible until late in the summer, some of the high trails being blocked by snow at the end of August.

The trail from Yosemite Valley to Lake Merced was made about 4 miles shorter.

## BRIDGES.

The recommendation of last year is renewed that the Sentinel Bridge be replaced by a reenforced concrete bridge about four times as wide as the present bridge, which is just wide enough for one wagon and is in a dilapidated condition.

The log bridge over Yosemite Creek near Camp Yosemite will be replaced this fall by a new one. The foot suspension bridge over the Merced near Camp Ahwahnee was badly damaged by the high water in the river and floating logs, but has been repaired.

Part of the bridge over the Tuolumne in the Hetch Hetchy Valley was carried away by high water and floating logs and has not yet been repaired.

## CONCESSIONS.

The following concessions were held in the park during the period from November 1, 1910, to October 31, 1911:

*Concessions, season of 1911.*

| No. | Name. | For what granted. | Expiration. | Annual rental. |
|---|---|---|---|---|
| | LEASES. | | | |
| | Cook, J. B., estate of | Sentinel and Glacier Point Hotels. | Oct. 31, 1911 | $3,500 |
| | Coffman, J. W | Livery | ....do | 1,500 |
| | Jorgensen, Chris | Studio | Oct. 31, 1914 | 1 |
| | PERMITS. | | | |
| 1 | Best, H. C | Studio, photographs, etc | Oct. 31, 1911 | 300 |
| 2 | Boysen, J. T | ....do | ....do | 300 |
| 3 | Coffman, J. W | Blacksmith shop | ....do | 40 |
| 4 | Cook, J. B., estate of | Public camp | ....do | 1,000 |
| 5 | Curry, David A | ....do | ....do | 1,000 |
| 6 | Degnan, John | Residence | ....do | 20 |
| 7 | Degnan, Mrs. John | Sale of bread, milk, etc | ....do | 25 |
| 8 | Fiske, George | Studio, photographs, etc | ....do | 20 |
| 9 | Foley, D. J | ....do | ....do | 250 |
| 10 | Pillsbury, Arthur C | ....do | ....do | 300 |
| 11 | Salter, Nelson L | Merchandise store | ....do | 1,000 |
| 12 | Sell, W. M | Public camp | ....do | 1,000 |
| 13 | Yosemite Transportation Co | Transportation | ....do | 2,500 |
| 14 | ....do | Hauling freight | ....do | 250 |
| 15 | Baxter, E. N | Studio, photographs, etc | ....do | 50 |
| 16 | Baker, John, jr | Transportation | ....do | 100 |
| 17 | Smith, Fred H | Shoe repairing, etc | ....do | 25 |
| 18 | Drum, F. G., lessee | Transportation | ....do | 2,000 |
| 19 | Pepoon, Margaret A | Manicuring, chiropody | ....do | 10 |
| 20 | Torrence, Edward | Guide | ....do | 20 |
| 21 | Kenney, Charles A | ....do | ....do | 40 |

## HOTELS AND CAMPS.

There is only one hotel in Yosemite Valley, and it was built years ago for summer use only, possesses few conveniences, and does not admit even of being remodeled to advantage. A new hotel with all conveniences for winter and summer travel and located on the north side of the valley is much needed.

Camp Ahwahnee, Camp Lost Arrow, and Camp Curry were all operated satisfactorily during the summer, and with the hotel and its annexes accommodated comfortably all visitors during the season.

The sewer systems of Camps Ahwahnee and Curry were enlarged and gave no trouble this year.

## SAN FRANCISCO WATER SUPPLY.

In 1907 the Secretary of the Interior granted a hearing at San Francisco in regard to reopening the matter of granting reservoir rights of way in the Hetch Hetchy Valley and at Lake Eleanor, in the Yosemite National Park, for the furnishing of an adequate supply of Sierra water for the city of San Francisco, under an application of James D. Phelan, former mayor of the city, which had been filed October 15, 1901, later assigned to the city, and denied by the department.

Mr. Marsden Manson, city engineer, department of public works, was given authority to act for the city, and after extended hearings, conferences, and the submission of briefs for and against the proposition, the Secretary, in the exercise of the discretion vested in him by the act of February 15, 1901, reinstated the Phelan application on May 11, 1908, and granted the option which the city of San Francisco desired until the matter could be submitted to the voters and definite action taken upon the filing of certain stipulations affording ample protection to the park lands and to the rights of the Modesto and Turlock irrigation districts to the use of the flow of the Tuolumne River. The stipulations provide, among other things, that the Lake Eleanor site shall be developed to its full capacity before beginning the development of the Hetch Hetchy site. The city will be required to pay for timber cut or used in the exploitation of the reservoir site or rights of way for conduits, etc., and for any power which may be generated in the future and sold commercially.

The city's representatives have surveyed a dam site in sec. 3, T. 1 N., R. 19 E., at Lake Eleanor, and have taken preliminary steps to clear and explore for foundations for the dam, the timber on the site having been first appraised by a forest officer of the Department of Agriculture, at the request of the Secretary of the Interior. A camp site and temporary buildings for laborers were also established. Preliminary surveys of the Lake Eleanor main canal, running from the dam above mentioned to a junction with the Hetch Hetchy main canal, and of the Cherry Creek diversion canal, running from Cherry Creek, in sec. 8, T. 2 N., R. 19 E., to the Lake Eleanor dam site, were approved by the department on February 25, 1909.

The sum of $13,128.77 has been accepted from the city as payment in full for timber and forest growth in the reservoir space of Lake Eleanor, Tuolumne County, Cal., upon the land under control of the United States to be flooded by the first reservoir level constructed under the grant to the city of May 11, 1908.

On February 25, 1910, the Secretary of the Interior issued a citation to the mayor and supervisors of the city and county of San Francisco to show cause why the Hetch Hetchy Valley and reservoir site should not be eliminated from the permit granted May 11, 1908, for a water supply for the said city and county. A board of Army engineers, consisting of Col. John Biddle, Lieut. Col. Harry Taylor, and Maj. Spencer Cosby, United States Engineer Corps, were detailed at the request of the Secretary of the Interior as advisory to him in the disposition of the question. Congress appropriated $12,000 to defray the expenses of this board.

An application having been made by the city for an extension of time to secure further data, a continuance for such purpose was granted for one year, or until June 1, 1911, and the advisory board of Army engineers was authorized to receive such data as might be furnished by the city to establish its claims for the necessity for the use of the Hetch Hetchy site, and secure such further information on the subject as might be advisable. On application a further continuance was granted until December 1, 1911.

## BUILDINGS.

The building occupied by the superintendent as a residence and office was remodeled and enlarged, but it is unsuitable as a residence and should be used entirely for administrative purposes. It is recommended that a separate residence be constructed for the superintendent.

The recommendation that cottages be built for the resident engineer, the clerk, and for each of the two electricians having been approved by the department, proposals for the construction of the cottages were invited and received, but all were rejected as excessive, and it was decided to build them by day labor under the supervision of the resident engineer.

A new barn was constructed at a cost of about $1,800.

## POWER PLANT.

The improvement to the power plant reported last year as being in progress, under an allotment of $10,000, was duly completed within the allotment, and a further improvement has been made this summer by the installation of a new Pelton wheel. A power-transmission system was installed from Camp Ahwahnee to the rock quarry near Pohono Bridge, about 4 miles, and the water-tank pumps and the rock crusher were operated during the summer by electrical power. The plant is, however, generally of flimsy material and faulty construction, and should be replaced by a new one.

## ROCK QUARRY.

The rock quarry has been much enlarged in capacity by the installation of a new rock crusher, and it is believed that this equipment will provide an ample supply of road material for years to come.

## WATER SUPPLY.

During the winter, explorations were made with the view of determining what steps would be necessary to develop the spring that supplies Yosemite village, Camp Yosemite, and Camp Curry, and as a result it was decided to build two concrete basins in such location as would pen up the outflow and direct it all into a new system of mains and distributing pipes. An allotment of $15,000 was made to begin the project and extend it as far as practicable with that sum. The explorations made demonstrated what had long been suspected, that most of the outflow of this spring of ideal water was running to waste through the sands near the present basin, and it is believed that enough will be conserved to supply the valley with water for many years.

## SANITATION.

A septic tank was installed at Camp Lost Arrow, and additional septic tanks were added to the sewerage systems of Camps Ahwahnee and Curry, with satisfactory results in each case.

The disposal of manure from the various stables in Yosemite Valley was not satisfactory, however, and an incinerator for garbage and stable manure has become a necessity.

In cooperation with the Board of Health of the State of California, a continuous warfare has been carried on during the year against the rodents, or ground squirrels, in the park, and many hundreds have been destroyed.

## UNDERGROWTH.

Gradual progress is being made in removing the undergrowth and clearing the thickets that have spread so extensively over Yosemite Valley.

## GALEN CLARK MEMORIAL SEAT.

A granite memorial seat of appropriate design was completed and set in place about a quarter of a mile south of the foot of Yosemite Falls.

## ACCIDENTS.

On June 3, 1911, the horses of one of the stage coaches ran away while descending into Yosemite Valley, the coach turned over, and all the passengers were badly hurt. Mr. R. S. Leisenring, of Allentown, Pa., died of his injuries a few hours later, and Mrs. Sarah Diefenderfer, of Milwaukee, Wis., died on June 8, of pneumonia, due to injuries received in the same accident.

June 13, 1911, Mr. L. Rehfuess, of Berkeley, Cal., was accidentally drowned in Illilouette Creek below the falls.

Mr. James McCauley, who had lived for many years on the southwest boundary of the park near El Portal, was found dead in the Coulterville Road near its junction with the El Portal Road, his team having run away and thrown him out, fracturing his skull.

On July 16, 1911, nine saddle animals were instantly killed by the same bolt of lightning on the trail between Illilouette Creek and Glacier Point.

## CAMP YOSEMITE.

This is the camp of United States troops and is situated about one-fourth mile southwest of the foot of Yosemite Falls. The War Department has begun the erection of two temporary barracks, two lavatories, and seven cottages, and the installation of a water and sewer system in this camp, all to be completed before the end of the year.

## VISITORS.

Between October 1, 1910, and March 31, 1911, there were 713 visitors to the valley, and between April 1 and September 30, 1911, there were 11,817 visitors, a total for the year of 12,530 visitors, which were distributed about as follows: Sentinel Hotel, 4,286; Camp Curry, 3,622; Camp Lost Arrow, 1,900; Camp Ahwahnee, 1,213; and transient camps, 1,509. In addition to these visitors to the valley it is estimated that about 300 people visited the park during the season who did not come to Yosemite Valley.

About 10,647 of these visitors were transported by the Yosemite Valley Railroad to El Portal and by the Yosemite Transportation Co. from such terminus to Yosemite Valley. The Yosemite Transportation Co. also carried 3,087 of these visitors from Yosemite Valley to the Mariposa Big Tree Grove during the season.

The following list, though incomplete as to the full number of tourists to the Yosemite National Park, indicates the points in the United States and the foreign countries from which 9,502 of the travelers came:

*Residences of visitors to Yosemite National Park.*

| | | | |
|---|---|---|---|
| Alabama | 15 | Nevada | 57 |
| Arizona | 21 | New Hampshire | 14 |
| Arkansas | 7 | New Jersey | 107 |
| California | 5,935 | New Mexico | 15 |
| Colorado | 59 | New York | 657 |
| Connecticut | 45 | North Carolina | 9 |
| Delaware | 5 | North Dakota | 11 |
| District of Columbia | 52 | Ohio | 197 |
| Florida | 19 | Oklahoma | 14 |
| Georgia | 17 | Oregon | 37 |
| Idaho | 3 | Pennsylvania | 230 |
| Illinois | 351 | Rhode Island | 27 |
| Indiana | 82 | South Carolina | 5 |
| Iowa | 60 | South Dakota | 9 |
| Kansas | 52 | Tennessee | 23 |
| Kentucky | 48 | Texas | 90 |
| Louisiana | 12 | Utah | 19 |
| Maine | 13 | Vermont | 7 |
| Maryland | 47 | Virginia | 27 |
| Massachusetts | 249 | Washington | 89 |
| Michigan | 60 | West Virginia | 7 |
| Minnesota | 31 | Wisconsin | 58 |
| Mississippi | 12 | Wyoming | 7 |
| Missouri | 145 | | |
| Montana | 15 | Total | 9,113 |
| Nebraska | 42 | | |

FOREIGN COUNTRIES.

| | | | |
|---|---|---|---|
| Australia | 18 | Japan | 9 |
| Austria | 4 | Mexico | 2 |
| Canada | 37 | Russia | 5 |
| China | 13 | Sweden | 6 |
| Denmark | 3 | South America | 5 |
| England | 94 | Switzerland | 6 |
| France | 21 | Philippino Islands | 6 |
| Germany | 87 | | |
| Hawaii | 56 | Total | 389 |
| Holland | 5 | | |
| India | 7 | Grand total | 9,502 |
| Italy | 5 | | |

## ESTIMATES.

The following are the estimated expenditures required during the fiscal year ending June 30, 1913:

*Estimates for fiscal year ending June 30, 1913.*

| | |
|---|---|
| Pay of 1 civil engineer | $2,000 |
| Pay of 1 supervisor | 1,500 |
| Pay of 1 stenographer and typewriter | 1,200 |
| Pay of 1 chief electrician | 1,200 |
| Pay of 1 assistant electrician | 1,080 |
| Pay of 1 plumber | 1,080 |
| Pay of 2 rangers | 2,400 |
| For repair of existing roads, trails, bridges, culverts, buildings, plants, and fences, camp sanitation, and removal of undergrowth | 25,000 |

| | |
|---|---|
| For operating present road-sprinkling system | $7,500 |
| For extension of road-sprinkling system to Fort Monroe and Happy Isles and operation of same | 7,500 |
| For 1 garbage incineratory | 6,900 |
| For continuing the installation of the water distribution system now in progress in Yosemite Valley | 25,000 |
| For continuing the improvement of the road on the south side of the Merced River from Camp Ahwahnee to Happy Isles, 3½ miles | 46,750 |
| For improving the road on the north side of the Merced River from Pohono Bridge to the junction with the Coulterville Road, 3½ miles | 50,210 |
| For construction of new road along south rim of Yosemite Valley from Fort Monroe to Glacier Point | 75,000 |
| For a reenforced concrete bridge to replace the Sentinel Bridge over the Merced River in Yosemite Valley | 14,000 |
| For construction of trail from Merced Lake up the Merced River Canyon to the head of the Merced River, about 25 miles | 5,000 |
| For construction of trail from the head of Lyell Fork Meadows to the Lyell Glacier, about 8 miles | 1,500 |
| For construction of road from the park boundary near the Hog Ranch to Hetch Hetchy Valley | 60,000 |
| For construction of bridge over the Tuolumne River in the Hetch Hetchy Valley | 3,000 |
| Total | 337,820 |

## RECOMMENDATIONS.

It is recommended: (1) That all patented lands in the park be condemned and purchased by the Government; (2) that comfortable hotel accommodations be provided; (3) that an appropriation be obtained for the construction of a road from Fort Monroe to Glacier Point along the south rim of the valley (when built it will be for its length one of the most remarkable mountain scenic roads in the world; the survey, location, and all other preliminary work has been completed); (4) that an appropriation be obtained to complete the improvement of the El Portal-Yosemite village road; (5) that the road-sprinkling system be expanded as indicated in the table of estimates; (6) that a law be enacted for the government of the Yosemite Park similar to that provided for the Yellowstone Park.

Attention is invited to the appended report of the resident engineer, Mr. David A. Sherfey.

Very respectfully,

Wm. W. Forsyth,
*Major, Sixth Cavalry, Acting Superintendent.*

The Secretary of the Interior.

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## APPENDIX.

### REPORT OF RESIDENT ENGINEER.

Yosemite, Cal., *October 15, 1911.*

Sir: I have the honor to submit the following report in reference to work done under my direction since entering upon my duties, November 14, 1910, to October 1, 1911:

### ROADS.

On the road leading from El Capitan Bridge to Camp Ahwahnee, on the south side of the river, a Telford base 22 feet wide had been completed for a distance of 2,232 feet previous to my arrival in the park. On the 1st of June, 1911, work was commenced on the covering of this base with gravel, and the same was completed July 19, 1911. This covering consists of about equal parts of gravel and clay, the gravel being taken from the Merced River and screened; the clay was taken from small clay deposits. The clay was first laid over the Telford base, then the gravel was spread, and the whole thoroughly sprinkled and rolled. The cost of this work was $1 per linear foot. This road is now well packed and has a hard, smooth surface on those parts most subject to traffic. There is an extensive supply of gravel in the river bed for this kind of work, but it is accessible only during low water in the fall season, and is of an inferior grade for road-building purposes. Clay suitable for a binder to the gravel is found only in a few places in the lower part of the valley, and the deposits are not large. If this type of construction were attempted in the upper part of the valley, the cost of hauling the clay would materially increase the cost of the work. It is not as good or as permanent as a macadam road. For these reasons it is recommended that no further construction of this type be attempted except on unimportant roads where both gravel and clay are easily accessible.

From July 20 to September 5 the above-mentioned road was graded and covered with a Telford base for a distance of 4,485 feet. The grading was done with Fresno scrapers and a road grader. Rock was obtained from the slides at the foot of the walls of the valley. A portion of this work was done with rock that had been previously hauled along the line of the work, but those portions done entirely during this period cost 63 cents per linear foot of road. The base is 22 feet in width and has a rustic curb of large bowlders on each side.

Preparations for crushing rock to be used for macadam roads have been in progress since my arrival in the park and were practically completed on September 1, 1911. This work consists of the installation of a Pelton water wheel and governor in the power house, the extension of the two-phase electric transmission lines a distance of 4.4 miles, the installation of a gyratory rock crusher with a capacity of 40 tons per hour, revolving screen, and motors, and the opening of a rock quarry. This work represents a cost of about $16,000.

During September 828 feet of Telford base had been covered with macadam furnished by the above plant. At the present writing an intelligent estimate of the cost of this work can not be made since much of the work charged to road construction is development work incident to the installation and putting in operation of a new plant.

## WATER SUPPLY.

Shortly after my arrival in the park investigations were made to determine the possibility of the increase of the local water supply, which has been from a spring at the foot of the cliff below Glacier Point. Test holes were dug in the vicinity of the old spring and levels taken of the surface of the ground water, which lead to the conclusion that there was escaping around the old spring a considerable amount of water which could be diverted and made to serve as a part of the water supply of the valley. Plans comprising the building of two concrete spring houses with diverting drains were prepared and approved by the department, and construction commenced the latter part of July of this year. At the present writing the work has so far progressed as to show that the expectation of a large increase in the available water has been amply realized, and it seems that any necessity of taking water from the Merced River has been indefinitely postponed and that such necessity may never arise.

The water pipes leading from the old spring were of thin steel, which in many places had become badly corroded, so that repairs were difficult to make. Six thousand feet of 8-inch cast-iron pipe has been purchased and delivered to replace an equal amount of the steel pipe and is now being installed. This represents but about one-fifth of the total amount of work to be done in order to put the water system of the valley in good condition. Attention is invited to the necessity of the early completion of the improvements to the water-supply system.

### BUILDINGS.

An addition has been completed to the acting superintendent's residence, and plans have been prepared and work commenced on four cottages for permanent park employees.

### OTHER WORK.

A memorial seat to Galen Clark has been completed. Two pumping stations in the valley and a pipe line along the El Portal road, all being equipment necessary for the operation of the sprinkling wagons along this road, have been installed and placed in successful operation.

Very respectfully

David A. Sherfey,
*Resident Engineer.*

The Acting Superintendent of the
Yosemite National Park.

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## RULES AND REGULATIONS OF JUNE 1, 1909.

The following rules and regulations for the government of the Yosemite National Park, including the Yosemite Valley and Mariposa Big Tree Grove, are hereby established and made public, pursuant to authority conferred by the acts of Congress approved October 1, 1890, February 7, 1905, and June 11, 1906:

1. It is forbidden to injure or disturb in any manner any of the mineral deposits, natural curiosities, or wonders on the Government lands within the park.
2. It is forbidden to cut or injure any timber growing on the park lands, or to deface or injure any Government property. Camping parties will be allowed to use dead or fallen timber for fuel. When felling timber, stumps must not be left higher than 12 inches from the ground.
3. Fire should be lignted only when necessary and completely extinguished when not longer required. The utmost care must be exercised at all times to avoid setting fire to the timber and grass.
4. Hunting or killing, wounding or capturing, any bird or wild animal on the park lands, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means

of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed on the park lands under other circumstances than prescribed above, will be taken up by the superintendent and held subject to the order of the Secretary of the Interior, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof. On arrival at the first station of the park guard, parties having firearms, traps, nets, seines, or explosives will turn them over to the sergeant in charge of the station, taking his receipt for them. They will be returned to the owners on leaving the park.

5. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for purposes of merchandise or profit is forbidden. Fishing may be prohibited by order of the superintendent in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

6. No person will be permitted to reside permanently, engage in any business, or erect buildings, etc., upon the Government lands in the park without permission, in writing, from the Secretary of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion. No pack trains will be allowed in the park unless in charge of a duly registered guide.

7. Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; such lands, however, shall have the metes and bounds thereof so marked and defined that they may be readily distinguished from the park lands. Stock may be taken over the park lands to patented lands with the written permission and under the supervision of the superintendent.

8. The herding or grazing of loose stock or cattle of any kind on the Government lands in the park, as well as the driving of such stock or cattle over the same, is strictly forbidden, except in such cases where authority therefor is granted by the superintendent.

9. No drinking saloon or barroom will be permitted upon Government lands in the park.

10. Private notices or advertisements shall not be posted or displayed on the Government lands within the reservation, except such as may be necessary for the convenience and guidance of the public.

11. It is forbidden to carve or write names or otherwise deface any of the posts, signboards, platforms, seats, railings, steps, bowlders, trees, or structures of any kind in the park.

12. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who may violate any of the foregoing rules, will be summarily removed from the park and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

No lessee or licensee shall retain in his employ any person whose presence in the park shall be deemed and declared by the superintendent to be subversive of the good order and management of the reservation.

13. The superintendent designated by the Secretary is hereby authorized and directed to remove all trespassers from the Government lands in the park and enforce these rules and regulations and all the provisions of the acts of Congress aforesaid.

## INSTRUCTIONS OF JUNE 1, 1909.

(1) Interference with or molestation of any bear or other wild animal in the park in any way by any person not authorized by the superintendent is prohibited.

(2) *Fires.*—The greatest care must be exercised to insure the complete extinction of all camp fires before they are abandoned. All ashes and unburned bits of wood must, when practicable, be thoroughly soaked with water. Where fires are built in the neighborhood of decayed logs, particular attention must be directed to the extinguishment of fires in the decaying mold. Fire may be extinguished where water is not available by a complete covering of earth well packed down. Care should be taken that no lighted match, cigar, or cigarette is dropped in any grass, twigs, leaves, or tree mold.

(3) *Camps.*—No camp will be made except at designated localities. All campers in Yosemite Valley shall first report at the office of the superintendent for assignment to camping sites, and will not change camps without permission, nor shall fires be lighted in Yosemite Valley or Mariposa Big Tree Grove without the express permission of the superintendent. Blankets, clothing, hammocks, or any other article liable to frighten teams must not be hung near the road. The same rule applies to temporary stops, such as for feeding horses or for taking luncheon.

Many successive parties camp on the same sites during the season, and camp grounds must be thoroughly cleaned before they are abandoned. Tin cans must be flattened and, with bottles, cast-off clothing, and all other débris, must be deposited in a pit provided for the purpose. When camps are made in unusual places where pits may not be provided, all refuse must be hidden where it will not be offensive to the eye.

(4) *Bicycles.*—The greatest care must be exercised by persons using bicycles. On meeting a team the rider must stop and stand at side of road between the bicycle and the team—the outer side of the road if on a grade or curve. In passing a team from the rear, the rider should learn from the driver if his horses are liable to frighten, in which case the driver should halt and the rider dismount and walk past, keeping between the bicycle and the team.

(5) *Fishing.*—All fish less than 6 inches in length should at once be returned to the water with the least damage possible to the fish. No one person shall catch more than 50 fish in one day.

(6) *Dogs.*—Dogs are not permitted in the park.

(7) *Stages.*—Stages entering Yosemite Valley shall stop at each hotel or permanent camp in the order of location so that passengers may exercise the right of selection.

(8) *Driving on roads of park.*—(*a*) Drivers of vehicles of any description, when overtaken by other vehicles traveling at a faster rate of speed, shall, if requested to do so, turn out and give the latter free and unobstructed passageway.

(*b*) Vehicles, in passing each other, must give full half of the roadway. This applies to freight outfits as well as any other.

(*c*) Freight, baggage, and heavy camping outfits on sidehill grades throughout the park will take the outer side of the road while being passed by passenger vehicles in either direction.

(*d*) Transportation companies, freight and wood contractors, and all other parties and persons using the park roads will be held liable for violations of these instructions.

(*e*) Mounted men on meeting a passenger team on a grade will halt on the outer side until the team passes. When approaching a passenger team from the rear warning must be given, and no faster gait will be taken than is necessary to make the passage, and if on a grade the passage will be on the outer side. A passenger team must not be passed on a dangerous grade.

(*f*) All wagons used in hauling heavy freight over the park roads must have tires not less than 4 inches in width. This order does not apply to express freight hauled in light spring wagons with single teams.

(9) *Miscellaneous.*—Automobiles and motor cycles are not permitted in the park.

No person shall ride or drive faster than a walk over any of the Government bridges within the park. Riding or driving at night, except on the floor of the Yosemite Valley, is forbidden.

Persons with animals using trails must keep therein; leaving the trails for the purpose of making short cuts will not be permitted.

Persons are not allowed to bathe near any of the regularly traveled roads in the park without suitable bathing clothes.

Campers and all others, save those holding license from the Secretary of the Interior, are prohibited from hiring their horses, trappings, or vehicles to tourists or visitors in the park.

All complaints by tourists and others as to service, etc., rendered in the reservation should be made to the superintendent in writing before the complainant leaves the park.

(10) The penalty for disregard of these instructions is summary ejection from the park.

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## REGULATIONS OF FEBRUARY 29, 1908, GOVERNING THE IMPOUNDING AND DISPOSITION OF LOOSE LIVE STOCK.

Horses, cattle, or other domestic live stock running at large or being herded or grazed in the Yosemite National Park without authority from the Secretary of the Interior will be taken up and impounded by the superintendent, who will at once give notice thereof to the owner, if known. If the owner is not known, notice of such impounding, giving a description of the animal or animals, with the brands thereon, will be posted in six public places inside the park and in two public places outside the park. Any owner of an animal thus impounded may, at any time before the sale thereof, reclaim the same upon proving ownership and paying the cost of notice and all expenses incident to the taking up and detention of such animal, including the cost of feeding and caring for the same. If any animal thus impounded shall not be reclaimed within 30 days from notice to the owner or from the date of posting notices, it shall be sold at public auction at such time and place as may be fixed by the superintendent after 10 days' notice, to be given by posting notices in six public places in the park and two public places outside the park, and by mailing to the owner, if known, a copy thereof.

All money received from the sale of such animals and remaining after the payment of all expenses incident to the taking up, impounding, and selling thereof, shall be carefully retained by the superintendent in a separate fund for a period of six months, during which time the net proceeds from the sale of any animal may be claimed by and paid to the owner upon the presentation of satisfactory proof of ownership, and if not so claimed within six months from the date of sale such proceeds shall be turned into the Yosemite National Park fund.

The superintendent shall keep a record in which shall be set down a description of all animals impounded, giving the brands found on them, the date and locality of the taking up, the date of all notices and manner in which they were given, the date of sale, the name and address of the purchaser, the amount for which each animal was sold and the cost incurred in connection therewith, and the disposition of the proceeds.

The superintendent will, in each instance, make every reasonable effort to ascertain the owner of animals impounded and to give actual notice thereof to such owner.

## PENALTY FOR INJURING TREES AND FOR NOT EXTINGUISHING FIRES.

[Excerpt from an act entitled "An act to provide for determining the heirs of deceased Indians, for the disposition and sale of allotments of deceased Indians, for the leasing of allotments, and for other purposes," approved June 25, 1910 (36 Stat., 857).]

SEC. 6. That section fifty of the act entitled "An act to codify, revise, and amend, the penal laws of the United States," approved March fourth, nineteen hundred and nine (Thirty-fifth United States Statutes at Large, page one thousand and ninety-eight), is hereby amended so as to read:

SEC. 50. Whoever shall unlawfully cut, or aid in unlawfully cutting, or shall wantonly injure or destroy, or procure to be wantonly injured or destroyed, any tree, growing, standing, or being upon any land of the United States which, in pursuance of law, has been reserved or purchased by the United States for any public use, or upon any Indian reservation or lands belonging to or occupied by any tribe of Indians under the authority of the United States, or any Indian allotment while the title to the same shall be held in trust by the Government, or while the same shall remain inalienable by the allottee without the consent of the United States, shall be fined not more than five hundred dollars, or imprisoned not more than one year, or both.

That section fifty-three of said act is hereby amended so as to read:

SEC. 53. Whoever shall build a fire in or near any forest, timber, or other inflammable material upon the public domain, or upon any Indian reservation, or lands belonging to or occupied by any tribe of Indians under the authority of the United States, or upon any Indian allotment while the title to the same shall be held in trust by the Government, or while the same shall remain inalienable by the allottee without the consent of the United States, shall, before leaving said fire, totally extinguish the same; and whoever shall fail to do so shall be fined not more than one thousand dollars, or imprisoned not more than one year, or both.

# REPORT OF THE ACTING SUPERINTENDENT OF THE SEQUOIA AND GENERAL GRANT NATIONAL PARKS.

# REPORT OF THE ACTING SUPERINTENDENT OF THE SEQUOIA AND GENERAL GRANT NATIONAL PARKS.

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SEQUOIA AND GENERAL GRANT NATIONAL PARKS,
OFFICE OF THE SUPERINTENDENT,
*Three Rivers, Cal., October 5, 1911.*

SIR: I have the honor to make the following report on the condition of affairs and the management of the Sequoia and General Grant National Parks:

## GENERAL CONDITIONS.

The rainfall and snow during the winter of 1910–11 was about normal in the parks and the surrounding country. Repair work on the roads and trails was begun in April, under the direction of Mr. Walter Fry, the ranger in charge, and they were found in good condition on June 2, the date of my arrival in the park, except the higher mountain trails, which were put in good condition by the end of the fiscal year, June 30.

Troop A, First Cavalry, 2 officers and 55 men, arrived June 2, for duty in the parks. The troop was accompanied by a surgeon and 3 men of the Hospital Corps, and was provided with the usual supply and transportation service. However, the transportation was insufficient and should be materially increased during the coming season. Camp was established at the old site, on the Giant Forest Road at the Marble Fork Bridge, but under orders from the department commander the camp was moved to the Parker group of "Big Trees," just off Moro Rock Road, 5½ miles beyond the old camp site and one-half mile from Moro Rock. Moving the camp was commenced June 23 and was not completed until July 18. Outposts of three men each were put on the more important entrances of the Sequoia Park and at the crossroads in the General Grant Park, the outposts in the Sequoia Park being located as follows: Rocky Gulch, Atwell Mill, Cold Springs, Elk Park Gate, Clough Cave, and supply camp outside the park limits at Kaweah. All of the stations were frequently inspected, and all roads and trails were patrolled from the several stations by the outposts and by officers and special patrols from the main camp, and by the five rangers—Mr. Decker in Grant Park; and Messrs. Blossom in the southwest, with headquarters at Hocketts Meadow; Britten in the southeast, at Quinns; and von Grunigen in the north, at Giant Forest, while Mr. Fry, having general supervision of improvement work, was kept constantly on horseback to cover all points.

On July 17 headquarters Third Squadron, Band, Troops B, I, K, and L, First Cavalry, arrived in the park, Maj. John H. Gardner commanding, Troop B, was sent to General Grant National Park, arriving there July 18, relieving the detachment there, which returned to Camp Sequoia. The remainder of the command marched into the Sequoia Park, but never reached Camp Sequoia on account of the failure of the contractor to furnish necessary supplies. This portion of the command returned to Kaweah, where it could obtain supplies, and remained there until July 30. At that date, under orders of the division commander, the command, including Troop B, started for the Presidio of San Francisco. A detachment of one noncommissioned officer and two privates was sent to General Grant National Park August 1. The detachment at Rocky Gulch was increased to five men.

## TOURISTS, TRAVEL, AND ACCOMMODATIONS.

There was quite an increase in the number of tourists entering the parks this season over that of last season. The numbers are as follows:

*Tourists in Sequoia Park, season of 1911.*

| | |
|---|---|
| April | 45 |
| May | 68 |
| June | 441 |
| July | 1,061 |
| August | 925 |
| September | 574 |
| Total | 3,114 |

*Tourists in General Grant Park, season of 1911.*

| | |
|---|---|
| April | ----- |
| May | 151 |
| June | 335 |
| July | 852 |
| August | 762 |
| September | 60 |
| Total | 2,160 |

The total for both parks was 5,274, compared with 3,585 for last year. Many persons used their own transportation, mostly vehicles of various descriptions; some ride and a few walk. Tourists generally throughout the season showed a gratifying disposition to observe the park rules and regulations, and they seemed to enjoy the parks thoroughly. The present railroad station for the Sequoia Park is Lemon Cove. There is a hotel at this place. The River Inn Co. has a hotel and store 1 mile above Three Rivers and about 10 miles from Lemon Cove, on the road to the Giant Forest. The same company also furnishes tent hotel accommodations and furnishes campers' supplies at Camp Sierra, in the Giant Forest; they also furnish stage transportation from Lemon Cove to the parks. This company has been granted a 10-year concession by the Interior Department, commencing June, 1912, authorizing them to conduct a transportation service and providing for the maintaining of hotels in the Giant Forest, in the Sequoia Park. The company intends to erect a number of buildings for the accommodation of tourists, which after completion will undoubtedly be the means of drawing a different class of tourists to the parks and in no way decrease the number of the present patrons, but as yet Mr. Stousland, the manager of the company, has had only a bathhouse erected. There is a telephone service at Camp Sierra, connecting with long distance, and triweekly mail. There are two stores at Camp Sierra, one operated by Mrs. Cora M.

Keller and one by the River Inn Co. Mrs. Keller caters to the general public, while the so-called store operated by the River Inn Co. is only to furnish their eating house and individual guests with necessary supplies. There are also two feed yards at Camp Sierra operated by the same parties on the same general plan as the stores.

General Grant Park also has telephone connections, triweekly mail service, a store, and tent hotel accommodations. The wagon roads in the General Grant Park are in very fair condition, but the motor roads are poor and sadly in need of repair. It will require considerable money and labor to put them in good condition.

## IMPROVEMENT WORK.

In the Sequoia Park 123 miles of trails were improved, and trails were completed as follows: The Clough Cave-Cold Spring trail, covering a distance of 3½ miles; 2½ miles of the Clough Cave-Dennison; and 6 miles of the Dennison-Summit Meadow trails. One-fourth mile of wagon road, leading from Giant Forest Road to the new military camp, was constructed, and the military camp site was cleared of brush and litter. About 2,000 feet of water pipe was laid into the tourist camp at Camp Sierra. A new post-office building has been erected at a cost of $950 at Ranger, in Camp Sierra.

The Mount Whitney Power & Electric Co. has entered into a contract with the Interior Department to utilize a portion of the waters of the Kaweah River for the purpose of generating electric power, and a force of its men (about 10) is constructing a trail from a point near the junction of the Middle and Marble Forks of the Kaweah River to the proposed dam near the Marble Falls on the Marble Fork.

At General Grant Park the fence has been repaired, additional auto signs were placed on the Government roads, repairs were made on the ranger's cabin, and about 1.100 feet of additional water pipe was laid to the tourist's camp.

## CONCESSIONS.

In the General Grant Park Mrs. Mattie Cooksey had a concession for a store, hotel accommodations, and feed yard. Mrs. Cooksey was also postmistress at the General Grant Park.

In the Sequoia Park the River Inn Co. maintained tent accommodations, an eating house, and a stage line from Lemon Cove to Camp Sierra; also a store and feed yard for its own convenience and that its individual guests. Mrs. Cora M. Keller maintained a store and feed yard for the general public. Mrs. Keller was also postmistress at Camp Sierra and acted as a Government agent in operating the Interior Department telephone installed in the Ranger post office. Mr. Eddy, photographer, whose concession was renewed, erected a very neat redwood studio on Government land about 50 yards from the Ranger post office.

## GRAZING.

The River Inn Co. grazed 10 milch cows and 20 beef cattle on private meadows in the Giant Forest for the purpose of supplying Camp Sierra and the military camp. During the season 496 head of cattle in 6 droves were allowed to pass through a section of the park on the Mineral King Road to the national forest, where grazing privileges were held by their owners.

## WEATHER CONDITIONS.

The past season was a dry one, there was practically no rain, and the roads were exceedingly dusty. The weather was generally clear and the atmosphere bracing and usually cool and pleasant.

## FIRES.

During the season there were two forest fires. The first was at Mitchell Meadow, caused by lightning July 28, 1911; extinguished the following day by Ranger Blossom and two soldiers; area burned, one-half acre.

The second fire was at Horse Creek, caused by lightning July 30, 1911. This fire was surrounded by Ranger Blossom and four soldiers on August 4 and a patrol around the burned area to prevent any further spreading of the fire was kept on duty until August 11, when it was thought the fire had burned itself out. On August 19 it was reported that this same fire had broken out again. This time 12 soldiers under Sergt. Zobin, Troop A, First Cavalry, were sent out to get the fire under control. The fire continued to spread and seemed to be getting beyond the control of the force fighting the same, and, on August 30, Rangers Blossom and von Grunigen and 6 additional soldiers were sent to reenforce and aid the fire-fighting party. This entire force fought the fire until September 5 when they managed to surround it, but the fire was not finally extinguished until September 13. About 600 acres were burned, mostly in brush country.

The forest-fire notices furnished by the Interior Department are posted in a great many conspicuous places both in and out of the parks.

The fishing is nothing remarkable and the streams are practically fished out early in the season. The fishing is supposed to be one of the greatest drawing cards of the parks, and to make the sport attractive and worth while I recommend that the Government establish a hatchery within the limits of the park with a suitable force to care for the same and to well stock each vear all the desirable streams.

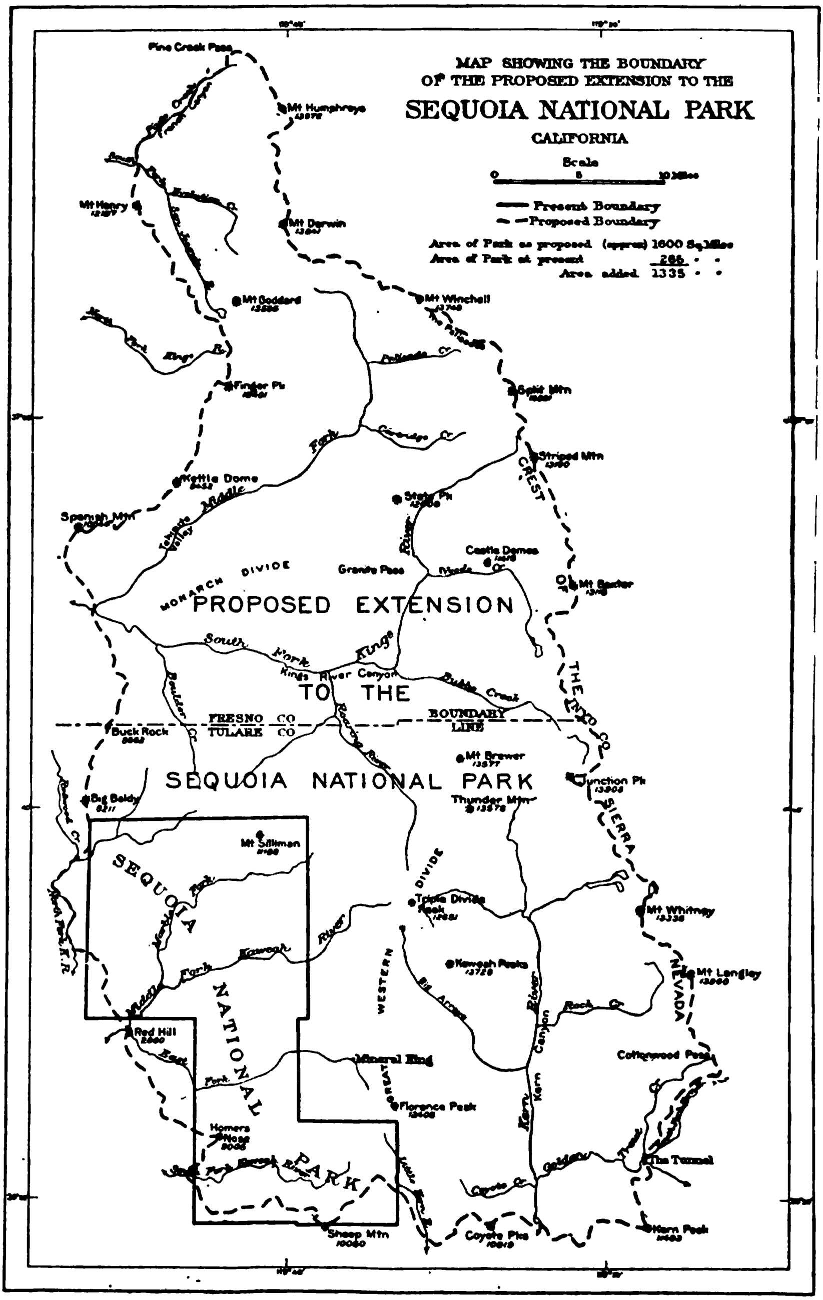
## RODENTS.

In order to comply with a State law of California there was allotted by the department $55 for the purchase of poisoned grain—$50 for the Sequoia Park and $5 for General Grant Park—for the extermination of rodents. There was an unusual and unavoidable delay in securing the poisoned grain. However, the grain has arrived and will be distributed to the rangers, and the extermination of the rodents will commence immediately.

## EXTENSION OF THE PARKS.

This subject has been discussed by several of my predecessors, and a variety of new boundaries have been suggested and the advantages and disadvantages to the park that would result from such extensions have been gone over quite thoroughly. In thinking over the matter and discussing the same with the rangers on duty in the Sequoia Park, who have a thorough knowledge of the country and several years' experience of active duty in their present positions, I am of the opinion that the following boundary, suggested by Mr. R. B. Marshall, chief topographer, Geological Survey, would be most desirable.

Beginning at a point on the range line between ranges 31 and 32 east, in township 18 south, of the Mount Diablo base and meridian, being a point on the present eastern boundary of the Sequoia National Park where it crosses the hydrographic divide between Little Kern River and Soda Creek; thence southeasterly along the hydrographic divide between Little Kern River and Soda Creek to the junction of Little Kern River and Quail Creek; thence easterly along the hydrographic divide between Quail Creek and Lion Creek to the summit of the Great Western Divide; thence southeasterly along the Great Western Divide to Coyote Peak; thence easterly along the hydrographic divide to the junction of Kern River and Little Creek, about one-half mile south of Kern Lake and between that lake and Little Lake; thence easterly along the main divide south of Little Creek and between Golden Trout Creek and Cold Creek (tributaries of Kern River) to the summit of Kern Peak; thence northerly and easterly along the hydrographic divide between the South Fork of Kern River and Golden Trout Creek to the summit of the Sierra Nevada; thence northerly along the main crest of the Sierra Nevada to Pine Creek Pass at the head of Piute Creek; thence following westerly down Piute Creek through French Canyon to the junction of the South Fork of San Joaquin River and Piute Creek; thence southerly along the main hydrographic divide to the summit of Mount Henry; thence southeasterly along the hydrographic divide between the drainage of the South Fork of the San Joaquin River and the drainage of the North Fork of Kings River to the junction with Goddard Divide; thence southerly and westerly along the hydrographic divide between Goddard Creek and the drainage of the North Fork of Kings River, and along the divide between Crown Creek and Blue Canyon Creek, along Kettle Ridge to Kettle Dome; thence southwesterly along the hydrographic divide to the junction of Crown and Fawn Creeks; thence westerly along the hydrographic divide between Fawn Creek and Rodgers Creek to Obelisk Peak; thence westerly along the main hydrographic divide south of Rodgers Creek to Spanish Mountain; thence southerly along the hydrographic divide (Deer Ridge) to the junction of the South and Middle Forks of Kings River; thence southerly along the hydrographic divide between Tenmile Creek and Lockwood Creek and along the Sequoia and Big Baldy Ridges to Big Baldy; thence southerly along the hydrographic divide (Big Baldy Ridge) to the junction of Redwood Creek and the North Fork of Kaweah River; thence following down


MAP SHOWING THE BOUNDARY
OF THE PROPOSED EXTENSION TO THE
SEQUOIA NATIONAL PARK
CALIFORNIA
Scale
0
5
10 Miles
Present Boundary
Proposed Boundary
Area of Park as proposed (approx) 1600 Sq. Miles
Area of Park at present 265 " "
Area added 1335 " "
Pine Creek Pass
Mt Humphreys
Mt Henry
Mt Darwin
Mt Goddard
Mt Winchell
Palisade Cr.
Finger Pk
Split Mtn
Kettle Dome
Striped Mtn
Spanish Mtn
Middle Fork
Tehipite Valley
State Pk
Castle Domes
Granite Pass
MONARCH DIVIDE
Mt Baxter
CREST OF THE SIERRA NEVADA
INYO CO
PROPOSED EXTENSION
TO THE
South Fork Kings
Kings River Canyon
Bubbs Creek
Boulder Cr
FRESNO CO
TULARE CO
BOUNDARY LINE
Buck Rock
Roaring River
Mt Brewer
SEQUOIA NATIONAL PARK
Junction Pk
Big Baldy
Thunder Mtn
Mt Silliman
SEQUOIA NATIONAL PARK
WESTERN DIVIDE
Triple Divide Peak
Mt Whitney
Kaweah Peaks
Mt Langley
Kaweah River
Big Arroyo
Kern River Canyon
Rock Cr
Red Hill
East Fork
Mineral King
GREAT WESTERN DIVIDE
Cottonwood Pass
Florence Peak
Homers Nose
Golden Trout Cr
The Tunnel
South Fork Kaweah River
Little Kern R.
Coyote Cr
Sheep Mtn
Coyote Pks
Kern Peak
North Fork K.R.
Redwood Cr

the east bank of the North Fork of Kaweah River to the junction with Cactus Creek; thence southeasterly along the hydrographic divide between Cactus Creek, Maple Creek, and the North Fork of Kaweah River to Ash Peaks; thence southerly along the hydrographic divide west of Alder Creek to the junction of the Middle and East Forks of Kaweah River; thence south and easterly along the hydrographic divide between the East Fork of Kaweah River and Salt Creek, over Red Hill, to Case Mountain; thence easterly along the hydrographic divide (Salt Creek Ridge) between the South and East Forks of Kaweah River to Homers Nose; thence southwesterly along the hydrographic divide east of Bennett and Burnt Camp Creeks to the junction of Burnt Camp Creek and the South Fork of Kaweah River; thence southeasterly along the hydrographic divide to Dennison Mountain; thence easterly along the hydrographic divide (Dennison Ridge) between the South Fork of Kaweah River, the North Fork of Tule River, and the North Fork of the Middle Fork of Tule River to Sheep Mountain; thence northeasterly along the hydrographic divide between the South Fork of Kaweah River, Pecks Canyon, Soda Creek, and Little Kern River to the place of beginning.

This boundary is a natural one, being the ridge line of numerous mountain chains. Practically all the new territory that would be acquired is now in the national forest, is of little value commercially, and of great value as a park reserve. Its natural beauties are great and varied, there is comparatively little deeded land within the indicated boundary, it forms a natural game preserve, and within this extensive area game of all kinds should prosper and increase rapidly, and be able to escape the hunter that each year is promptly, at the opening of the hunting season, at the most desirable points for the killing of such game, that by reason of the protection afforded by park regulations, easily fall victims to the enthusiastic and persistent hunter. These ridges are natural barriers and the game is not apt to stray or roam beyond them. Also within this proposed area there are some of the finest trout streams in the world, and these streams and the fishing therein should be so regulated as to preserve their reputation indefinitely.

## PURCHASE OF DEEDED POSSESSIONS.

This subject I know has been under discussion and investigation by the Government for a number of years, and I can say nothing new on the subject. Still I might repeat some of the facts and the advantages gained, should such a policy be adopted.

The individual owners would receive a fair compensation for their property, which, held under the present conditions, can be nothing more than a source of annoyance and a constant demand on the Government for certain privileges connected with such holdings, in order that they may develop the same, or manipulate it, so as to derive the greatest pecuniary benefit therefrom.

The purchase of said lands would eliminate the possibility of any trouble or friction between present land owners and Government forces, and would materially aid in the general and natural development of the parks.

## RECOMMENDATIONS.

### ADMINISTRATION OF THE SEQUOIA AND GENERAL GRANT PARKS BY CIVILIANS.

I recommend that the administration of the Sequoia and General Grant National Parks be placed in the hands of a civilian appointee (a retired Army officer, qualified by experience, knowledge and interest, would, in my opinion, make an admirable superintendent). I believe a similar appointment in the other parks to be equally desirable. A force of permanent park rangers should be appointed, sufficient to properly patrol the parks, enforce police regulations, protect game, forests, and prevent violations of park regulations. I believe some permanent arrangement could be made by which a sufficient number of able-bodied men could be assembled at short notice to fight fires, which are of such frequent occurrences in the mountain forests. The large majority of these fires are due to lightning. The men proposed to fight fires should be paid from a fund set aside for this particular purpose.

This scheme I believe to be in the interest of both economy and efficiency. One good ranger is, in my opinion, more valuable in the park work than a dozen soldiers. He is working in his chosen profession; he is interested in the park, in its successful administration, and in the enforcement of the park rules and regulations. It is his livelihood and he is permanent, whereas most soldiers do their work in a perfunctory manner and do it simply because they are ordered to do it, but not from any sense of interest they have in the park or its workings. Their work is temporary at the best and there is a great probability of one season in the park being their first and last park duty.

These remarks are to a certain extent applicable to an Army officer detailed as acting superintendent. I believe the best interests of the parks are neglected by these practically annual changes of superintendents. One superintendent will become more or less interested in certain improvement work requiring several years to complete. About the time he gets this work started the season closes; next year a new superintendent is appointed, and he is in no way interested in the work commenced by his predecessor, and probably this work will be abandoned for a new scheme, deemed more important by the new superintendent. A permanent superintendent such as I have suggested would avoid this waste of energy and funds and the consequent retardation of the general development and improvement of the parks.

In my opinion park duty for enlisted men in the Army is more or less detrimental to discipline and military training. From the necessities of the park work a large number of men are on detached duty, not subject to the personal observation and frequent inspection of their officers, and they become lax in discipline during this prolonged absence from proper military control. Under present conditions a large number of enlisted men are recruits, and if a recruit commences his service and gets his initial instructions under the above conditions it is doubly hard to make a good soldier of him and disabuse his mind of the impressions he acquired while on outpost duty early in his career with only a noncommissioned officer to direct and discipline him. There are a number of noncommissioned officers at the present time with a too limited experience.

I have not been able to obtain figures on the subject, but at a glance it seems to me that it would be a matter of great economy to have the parks administered by a civilian force. I do not mean that it would be more economical to the Interior Department, for the present arrangement, with a military police force, saves the Interior Department the amount it would require to employ the number of rangers necessary in the absence of the military. The expense to the War Department I believe to be much greater than would be the necessary expense incurred by the Interior Department in employing the proper number of civilians. As before stated, under this scheme I believe more efficient park work would be accomplished, and the military now engaged on park duty would be in a position to pursue the course of instruction, which I believe to be more in line with the training necessary to make competent and excellent soldiers of them.

### CLERK FOR THE ACTING SUPERINTENDENT.

It is recommended that the department supply a competent clerk for the acting superintendent from the Washington office, who is perfectly familiar with all the returns, reports, vouchers, and forms connected with the administration of the parks, this clerk to be present for duty in the park from May 15 to October 1 of each year, or for such periods as his services will be desirable by the acting superintendent. It is practically impossible to secure a competent clerk on short notice for such a short period at a reasonable rate of compensation, and the result is that the acting superintendent has to perform the clerical work or have it done by an enlisted man without any compensation whatever therefor.

### SALE OF COMMODITIES BY INDIVIDUALS HOLDING CONCESSIONS FROM THE INTERIOR DEPARTMENT.

I recommend that the department regulate the price of commodities sold by individuals who acquired concessions, allowing a certain percentage on all commodities. I am also in favor of granting a similar concession to two or more individual parties desiring the same. This will have a tendency to induce concessionaires to observe more strictly the conditions imposed upon them and will give the public a better return for their money.

### CONSTRUCTION AND IMPROVEMENT WORK TO BE DONE BY CONTRACT.

I recommend that all improvement and construction work in the parks be done by contract, instead of the present method of employment of day labor. I believe equally good, if not better, work can be done, and certainly it can be done cheaper, if honest competition in the securing of contracts can be secured.

### SANITATION.

As long as the military are in charge of the parks the surgeon of the command should be appointed sanitary inspector of the various tourist camps and make frequent inspections of them.

A list of simple sanitary rules should be drawn up by the surgeon and these posted or distributed among the tourists, and all the officers on duty in the park and all park rangers should promptly report any violations of them.

## WATER-PIPE SYSTEM FOR MILITARY CAMP.

During the season the military camp, by order of the department commander, was moved. The new camp site selected was the Parker group of "Big Trees" just off the Moro Rock Road, about one-half mile from Moro Rock. The site seemed the most desirable one that was available, and under conditions by which permanent water can be secured I believe it to be the best location to be had. There is a small stream running through the camp, but the flow is small and uncertain, and during a dry season it will certainly cease to run before the end of the tourist season. In selecting the present camp site it was contemplated to pipe water from Log Creek, at the head of Log Creek Meadow, a distance of about 1½ miles from the camp, with a fall of 161.15 feet. It was assumed that the War Department would make the necessary allotment of funds for this work. A requisition was made for the same and flatly refused by the War Department. This water system will cost at least $2,000, and it is earnestly recommended that if a military camp is to be continued in the parks that this amount be allotted for this work from the next year's appropriation and be made available for expenditure at a date as early as possible. If the work is to be done material should be on the ground by July 1 or as soon thereafter as possible. If this pipe line is not built the present camp site will most probably have to be abandoned, and it will be difficult to find a suitable new one.

## BUFFALO.

There are sections in the Sequoia Park that are peculiarly adapted for the propagation and all year around grazing of buffalo. They should thrive and increase with practically no care or attention. They are ornamental, and would be quite an acquisition to the park. It is recommended that a small herd, about 12, be sent from Yellowstone Park to the Sequoia Park. Inasmuch as a similar request or suggestion has been made during previous years and nothing accomplished, it is suggested that the necessary funds for the transportation and delivery of said buffalo be allotted from the park revenues.

## MORO ROCK.

It is extremely desirable to build an iron stairway to the top of Moro Rock. Moro Rock is a decided feature in the park, and the view from it is superb. At present in its natural condition the ascent to the summit of the rock is extremely dangerous, and only a few bold spirits accomplish this feat. It is extremely probable that at any time fatal accidents will result.

## BOATS.

A couple of metal rowboats for Twin Lakes would be a very desirable acquisition.

## GIANT FOREST ROAD.

The Giant Forest Road, the only means of entering the park by vehicle, is practically only 12 feet wide. It is difficult at most any point of the road for two vehicles to pass each other, and for great stretches of the road such passing is absolutely impossible. This road should be widened to 18 feet.

## CONSTRUCTION AND REPAIR WORK.

There are numerous schemes for original and repair work in the parks; all of these were enumerated and estimated for on the annual estimate sheet. I do not think it necessary or desirable to enter into details at this time concerning these schemes. After the next year's appropriation is made and the person in charge is called upon for a tentative scheme for allotting this money the various schemes can be taken up in the order of their relative importance and the immediate wants of the parks, bearing in mind the amount of money available for the prosecution and completion of said schemes.

## PROTECTION OF THE BIG TREES.

The most prominent of the big trees should be protected against fire by clearing away annually the brush and fallen timber for a considerable space around them. The most prominent and remarkable of these trees are the General Sherman, the McKinley, and Abe Lincoln in the Sequoia Park and the General Grant in the General Grant Park. The latter-named tree has a fence partially around it, but the fence was much damaged by falling limbs in 1909. To protect these trees against vandals, who have an irresistable desire to carve their names in public places, or otherwise mutilate monuments of all kinds, I recommend that substantial fences, preferably iron, be placed around the General Sherman tree (the largest and the most wonderful tree in the world) in the Sequoia Park and the General Grant tree in the General Grant Park.

## CARE OF THE FOREST.

Considering the great tracts of forest lands within the limits of the parks and the small amounts appropriated for the administration of them, all I can suggest under such conditions is that the greatest possible care, considering the means available, be exercised to prevent the starting of forest fires, or the spreading of the same when once started; also to check the ravages of insects, so destructive and deadly to a great variety of timber.

## ANIMALS AND GAME.

Predatory wild beasts have noticeably decreased during the past year, and this undoubtedly is due to the expenditure of $900 by the department in employing three hunters for three months during the winter season of 1910–11. It is recommended that a similar course be adopted during the coming winter.

So far as known no deer were killed by wild animals during the past season.

There was a marked increase in the smaller animals and birds, particularly tree squirrels, quail, and grouse.

The bears at Camp Sierra during the past season proved to be a general nuisance. Campers lost quantities of provisions that were stolen and destroyed by them, and on several occasions during the nighttime campers and tourists were alarmed and much frightened by the sudden and unwelcome visits of Mr. Bruin. So far as I know the bear is neither useful nor ornamental, and I recommend that he be exterminated.

The Fish and Game Commission of California supplied 150 wild turkeys, which were liberated August 23, 1911, at Hospital Rock, 10 miles east of the west boundary, on the middle fork of the Kaweah River. I am now in communication with the fish and game commissioners of California, who wish to furnish 150 more wild turkeys to be liberated in the Sequoia Park. I am trying to get possession of these birds and have them liberated without any cost to the department.

## FISH.

The best trout streams in the Sequoia Park are the Middle and East Forks of the Kaweah River and the headwaters of the South Fork and the upper Marble Fork.

Fish this year were planted by the Tulare County Sportmen's Club, of Visalia. About 90,000 of these fish were planted in the waters of the Kaweah, in the Elk Park, and west of the park boundary. Such replenishing of the streams is very uncertain, even with this outside aid and such similar donations as have been made in the past year.

## TROOPS ON DUTY IN THE PARKS.

Troop A, First Cavalry, was on duty in the parks during the past summer. The troop rendered excellent service in construction work, patrol duty, fire fighting, and in enforcing the park rules and regulations. The troop left the parks for its home station September 14, 1911.

## PARK RANGERS.

The park rangers, Mr. Walter Fry, head ranger, Mr. C. W. Blossom, Mr. H. T. Britten, and Mr. John G. von Grunigen, of the Sequoia Park, and Mr. Milo S. Decker, of the General Grant Park, performed their varied duties in a zealous and conscientious manner, and were loyal to the acting superintendent in doing all they could to make the administration of the parks as pleasant and efficient as existing conditions would admit.

James B. Hughes,
*Major, First Cavalry, Acting Superintendent.*

The Secretary of the Interior.

# RULES AND REGULATIONS.

## SEQUOIA NATIONAL PARK.

### General Regulations of March 30, 1907.

1. By act of Congress approved September 25, 1890, the tract of land in the State of California described in township 18 south and ranges 30 and 31 east, and also sections 31, 32, 33, and 34, in township 17 south and range 30 east, and by act of Congress approved October 1, 1890, the adjoining tract described as townships 15 and 16 south, ranges 29 and 30 east, and also township 17 south, range 30 east, except above-mentioned sections 31, 32, 33, and 34, have been set apart for a public park, and the same shall be known as the "SEQUOIA NATIONAL PARK."

2. The park by said act is placed under the exclusive control of the Secretary of the Interior, and these rules and regulations are made and published in pursuance of the duty imposed on him in regard thereto.

3. It is forbidden to injure or disturb in any manner any of the mineral deposits, natural curiosities, or wonders on the government lands within the park.

4. It is forbidden to cut or injure any timber growing on the park lands. Camping parties will be allowed to use dead or fallen timber for fuel.

5. Fires shall be lighted only when necessary and completely extinguished when not longer required. The utmost care must be exercised at all times to avoid setting fire to the timber and grass.

6. Hunting or killing, wounding or capturing any bird or wild animal on the park lands, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed on the park lands under other circumstances than prescribed above, will be taken up by the superintendent and held subject to order of the Secretary of the Interior, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof.

7. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for purposes of merchandise or profit is forbidden. Fishing may be prohibited by order of the superintendent of the park in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

8. No person will be permitted to reside permanently, or to engage in any business on the government lands in the park without per-

mission, in writing, from the Secretary of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains shall be allowed in the park unless in charge of a duly registered guide.

9. Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; such lands, however, shall have the metes and bounds thereof so marked and defined as that they may be readily distinguished from the park lands. Stock may be taken over the park lands to patented lands with the written permission and under the supervision of the superintendent.

10. The herding or grazing of loose stock or cattle of any kind on the government lands in the park, as well as the driving of such stock or cattle over the same, is strictly forbidden, except in such cases where authority therefor is granted by the superintendent.

11. The sale or use of intoxicating liquors on the government lands in the park is strictly forbidden.

12. Private notices or advertisements shall not be posted or displayed on the government lands within the reservation, except such as may be necessary for the convenience and guidance of the public.

13. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who may violate any of the foregoing rules, may be summarily removed from the park and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

14. The superintendent designated by the Secretary is hereby authorized and directed to remove all trespassers from the government lands in the park and enforce these rules and regulations and all the provisions of the act of Congress aforesaid.

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### Regulations of March 30, 1907, Governing the Impounding and Disposition of Loose Live Stock.

Horses, cattle, or other domestic live stock running at large or being herded or grazed on the government lands in the Sequoia National Park without authority from the superintendent of the park, will be taken up and impounded by the superintendent, who will at once give notice thereof to the owner, if known. If the owner is not known, notices of such impounding, giving a description of the animal or animals, with the brands thereon, will be posted in six public places inside the park and in two public places outside the park. Any owner of an animal thus impounded may, at any time before the sale thereof, reclaim the same upon proving ownership and paying the cost of notice and all expenses incident to the taking up and detention of such animal, including the cost of feeding and caring for the same. If any animal thus impounded shall not be reclaimed within thirty days from notice to the owner or from the date of posting notices, it shall be sold at public auction at such time and place as may be fixed by the superintendent after ten days' notice, to be given by posting notices in six public places in the park and two public places outside the park, and by mailing to the owner, if known, a copy thereof.

All money received from the sale of such animals and remaining after the payment of all expenses incident to the taking up, impounding, and selling thereof shall be carefully retained by the superintendent in a separate fund for a period of six months, during which time the net proceeds from the sale of any animal may be claimed by and paid to the owner upon the presentation of satisfactory proof of ownership, and if not so claimed within six months from the date of sale such proceeds shall be turned into the Sequoia National Park fund.

The superintendent shall keep a record in which shall be set down a description of all animals impounded, giving the brands found on them, the date and locality of the taking up, the date of all notices and manner in which they were given, the date of sale, the name and address of the purchaser, the amount for which each animal was sold and the cost incurred in connection therewith, and the disposition of the proceeds.

The superintendent will, in each instance, make every reasonable effort to ascertain the owner of animals impounded and to give actual notice thereof to such owner.

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## GENERAL GRANT NATIONAL PARK.

### General Regulations of March 30, 1907.

1. By act of Congress approved October 1, 1890, the tract of land in the State of California described as sections 5 and 6, in township 14 south, range 28 east of Mount Diablo meridian, and also sections 31 and 32, of township 13 south, range 28 east of the same meridian, have been set apart for a public park, and the same shall be known as the "GENERAL GRANT NATIONAL PARK," "General Grant" being the name by which the Great Tree therein is so widely known.

All other provisions of the General Grant Park regulations are the same as those for Sequoia National Park.

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### Regulations of August 17, 1910, Governing the Admission of Automobiles and Motorcycles into the General Grant National Park, California, during the Season of 1910–11.

Pursuant to authority conferred by the act of October 1, 1890 (26 Stat., 650), setting aside certain lands in the State of California as a public park, the following regulations governing the admission of automobiles into the General Grant National Park are hereby established and made public:

1. No automobiles will be permitted within the metes and bounds of General Grant National Park unless the owner thereof secures a written permit from the acting superintendent or his representative. Permits may be obtained from the acting superintendent at Three Rivers, Cal., or his authorized representative at the rangers' headquarters on the government road in the General Grant National Park.

2. Applications for permits must show: (*a*) Name of owner, (*b*) number of machine, (*c*) name of driver, and (*d*) inclusive dates for which permit is desired, not exceeding one year, and be accompanied by a fee of $1 for a single round trip through the park or a fee of $5

for each machine per annum. Permits must be presented to the acting superintendent or his authorized representative at the rangers' headquarters on the government road. The permittee will not be allowed to do a transportation business in the park without a special license therefor from the Secretary of the Interior. All permits granted at any time when automobiles can enter the park will expire on December 31 of the year of issue.

3. The use of automobiles will be permitted only on the Millwood road, the Round Meadow road, the North road north of its junction with the north end of the Round Meadow road, and the tourists' camp grounds, and return, between the hours of 6.30 a. m. and 10.30 a. m. and between the hours of 3.30 p. m. and 6. 30 p. m.

4. When teams approach, automobiles will take position on the outer edge of roadway, regardless of the direction in which they are going, taking care that sufficient room is left on the inside for the passage of teams.

5. Automobiles will stop when teams approach and remain at rest until teams have passed or until teamsters are satisfied regarding the safety of their teams.

6. Speed will be limited to 6 miles per hour, except on straight stretches, where approaching teams will be visible, when, if no teams are in sight, this speed may be increased to the rate indicated on signboards along the road. In no event, however, shall it exceed 15 miles per hour.

7. Signal with horn will be given at or near every bend to announce to approaching teams the proximity of an automobile.

8. Teams have the right of way, and automobiles will be backed or otherwise handled, as necessary, so as to enable teams to pass with safety.

9. Violation of any of the foregoing rules or the general regulations for the government of the park will cause revocation of permit, will subject the owner of the automobile to any damages occasioned thereby and to ejectment from the reservation, and be cause for refusal to issue a new permit to the owner without prior sanction in writing from the Secretary of the Interior.

10. All persons passing through the park with automobiles should be required to stop at the rangers' headquarters and register their names.

11. These rules are also applicable to motorcycles, which may use only the roads herein mentioned on payment of a fee of $1 for each machine per annum. Permits issued therefor shall expire on December 31 of the year of issue.

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## Penalties for Depredations on Timber and for Not Extinguishing Fires on the Public Lands.

[Excerpt from an act entitled "An act to provide for determining the heirs of deceased Indians, for the disposition and sale of allotments of deceased Indians, for the leasing of allotments, and for other purposes," approved June 25, 1910 (36 Stat., 857)].

SEC. 6. That section fifty of the act entitled "An act to codify, revise, and amend the penal laws of the United States," approved March fourth, nineteen hundred and nine (Thirty-fifth United States

Statutes at Large, page one thousand and ninety-eight), is hereby amended so as to read:

"SEC. 50. Whoever shall unlawfully cut, or aid in unlawfully cutting, or shall wantonly injure or destroy, or procure to be wantonly injured or destroyed, any tree growing, standing, or being upon any land of the United States which, in pursuance of law, has been reserved or purchased by the United States for any public use, or upon any Indian reservation or lands belonging to or occupied by any tribe of Indians under the authority of the United States, or any Indian allotment while the title to the same shall be held in trust by the Government, or while the same shall remain inalienable by the allottee without the consent of the United States, shall be fined not more than five hundred dollars, or imprisoned not more than one year, or both."

That section fifty-three of said act is hereby amended so as to read:

"SEC. 53. Whoever shall build a fire in or near any forest, timber, or other inflammable material upon the public domain, or upon any Indian reservation or lands belonging to or occupied by any tribe of Indians under the authority of the United States, or upon any Indian allotment while the title to the same shall be held in trust by the Government, or while the same shall remain inalienable by the allottee without the consent of the United States, shall, before leaving said fire, totally extinguish the same; and whoever shall fail to do so shall be fined not more than one thousand dollars, or imprisoned not more than one year, or both."

# REPORT OF THE SUPERINTENDENT OF THE MOUNT RAINIER NATIONAL PARK.

# REPORT OF THE SUPERINTENDENT OF THE MOUNT RAINIER NATIONAL PARK.

Office of Superintendent,
*Ashford, Washington, October 10, 1911.*

Sir: I have the honor to submit the following report of the condition of affairs in the Mount Rainier National Park for the fiscal year ended June 30, 1911, and for the season of 1911.

By the act of Congress approved March 2, 1899 (30 Stat. 993), certain tracts of land therein described, lying in the State of Washington, were set aside for the benefit and enjoyment of the people of the United States, to be known as the "Mount Rainier National Park." This park is 18 miles square, with an area of 207,360 acres, and lies wholly within the Rainier National Forest. The summit of Mount Rainier is about 1½ miles southwest of the center of the park, but the reservation includes substantially the whole mass of the mountain proper, with its wonderful glacial system, which is said to be the largest radiating from any single peak in the world.

The park by said act is placed under the exclusive control of the Secretary of the Interior, who, among other things, is authorized to establish rules and regulations and cause adequate measures to be taken for the preservation of the natural curiosities, timber, mineral deposits, game, etc., and the removal of unlawful occupants or trespassers.

## TOPOGRAPHY.

Mount Rainier is situated apart from and to the west of the main range of the Cascades. The ridges which radiate from it are high and broken. The entire area of 324 square miles included within the boundary of the park is very rough and mountainous. The summit of Mount Rainier is 14,526 feet in altitude. The lower valleys of the Carbon and Nisqually Rivers are not more than 2,000 feet above sea level, but the general elevation of the park exceeds 4,000 feet. Although there is little rain or snow from July 1 to the middle of September, the precipitation during the remainder of the year is very great. The season of tourist travel is confined largely to June, July, August, September, and the first part of October, although parties of tourists enter the park for snowshoeing and winter sports. During the winter months the Government road is kept open for sleighs as far as Longmire Springs. Beyond this point the park is impassable for horses.

The summit of Mount Rainier is accessible from Camp of the Clouds in Paradise Valley, and from St. Elmo Pass, between the White and Emmons Glaciers. The difficulty of the ascent depends largely upon the condition of the snow fields, which vary from year to year. It is dangerous and should not be attempted unless the party is accompanied by an official guide.

Between and below the glaciers are numerous open slopes and valleys which are covered with luxuriant growths of grasses, sedge, and flowering plants. These parks are diversified by growths of alpine fir and hemlock and by many small lakes and running streams. They present a pleasing contrast to the snow fields and rugged peaks by which they are surrounded, and are greatly admired by visitors. Paradise Valley is the most frequented of the many parks. The Government road running through this park and for some distance beyond the Camp of the Clouds makes it easily accessible for tourists. Near Paradise Valley and at the headwaters of Tahoma Fork is Indian Henry's Hunting Ground, so named from the circumstance that it was formerly the favorite resort of a small band of Klickitat Indians. Grand Park, between the main and west forks of White River, is one of the largest and most beautiful of these open tracts. At the altitude of 6,000 feet it is an almost level grassy plateau, the greater part of which is entirely without timber. Moraine Park, between the Sluiskin Range and the Carbon Glacier, is a small and very attractive mountain valley. A natural stone bridge has recently been discovered near the west branch of the White River. The span of the bridge measures 150 feet and is 200 feet from the floor of the ravine which it crosses. This bridge overlooks two rock-bound lakes.

It is 1 mile from the Grand Park trail. In Indian Henry's Hunting Ground a waterfall with a sheer drop of over 200 feet was discovered during the month of August, 1911, and named Pearl Falls.

## FOREST CONDITIONS.

The forest in the lower valley is of the type characteristic of western Washington and Oregon. The undergrowth is dense and the forest floor is covered with moss and with a litter of fallen branches and decayed wood. The predominant trees are the Douglas fir, hemlock, white fir, and cedar. At 3,000 feet these species occur together with the lovely and noble fir. From 4,000 feet to snow line the forest is distinctly alpine, and consists of mountain hemlock, alpine fir, and Alaska cedar. On the high ridges are numerous and extensive tracts of timber killed by fire before the creation of the park. These areas are reforesting very slowly. The high winds, scanty soil, short summers, and extremely cold winters are unfavorable to tree growth.

Only a small quantity of the timber in the park shows signs of disease, although a considerable portion of it has passed maturity. Some means should be found for the removal of the dead timber at the lower elevations. The cedar may be cut into shingle bolts and marketed, but the other species of dead timber have a value for fuel only, and all that can not be used for this purpose should be piled and burned, as the fire danger from this source is very great. The utmost care should be taken to prevent injury to the timber in the small natural parks that surround the mountain.

## ROADS AND TRAILS.

The Government road in the park was opened for travel to the Camp of the Clouds in Paradise Valley, a distance of 20½ miles from the park entrance, late in the summer of 1910, although not completed at that time. During the season of 1911 approximately $10,000 has been expended on its construction above Narada Falls, this amount remaining from the original appropriation, and $3,500 from park revenues for its maintenance and repair. The road is well located, but in places is narrow and poorly drained. Below Longmire Springs a 2 per cent grade is obtained, and between Longmire Springs and Paradise Valley it exceeds 4 per cent only in a few short stretches. The bridges are of heavy construction and well built, except those over the Tahoma and Kautz Forks, spans of 40 and 30 feet, respectively, and these should be replaced with steel bridges. Three and one-half miles of road have been constructed by the Government, from the western boundary of the Rainier National Forest to the western boundary of the national park, to connect the park and county roads. This stretch of roadway is in bad repair, there being no funds for its maintenance, and has not been brought to the grade intended by the engineer's survey. It should be transferred from the War Department to the Interior Department, placed under the control of the park superintendent, and appropriations be made for its upkeep and repair.

The present road from the western boundary of the Rainier National Forest to the Camp of the Clouds in Paradise Valley should be widened to 16 feet and macadamized, and at dangerous points parapets should be constructed to keep stages and automobiles from going off grade. It is estimated the cost of this work would be $6,500 per mile, except the section of rock work above Nisqually Glacier, which extends for a distance of 2 miles. This section is through a side cut of rock and hardpan, with the present wall from 12 to 40 feet in height, and with a perpendicular drop on the outside of from 800 to 1,200 feet. About 1,000 feet of the solid rock can be widened by a side chamber for approximately $2.50 per foot; the remainder must be widened from 8 to 10 feet on the bank side and the bank reduced to a slope of one to one to prevent the annual slides which are caused by the swelling of the material on the bank by rain and frost. Unlimited quantities of tough rock for macadam are found along the road in the park. One large slide of columnar basalt, broken ready for the crusher, has 3,000 feet of road constructed through it, and many fine ledges of granite are cut by the road from Nisqually Glacier to the head of Paradise Valley. The value of the material found in the park for binding purposes in macadam construction has not been proven, but the cementing properties of the soft rock and hardpan on Ricksecker Point are very noticeable.

The western entrance to the park is appropriately marked by an archway constructed of heavy cedar logs. This archway was erected during the spring of 1911, is 22 feet wide, 24 feet high in the clear, and from the center a hewn log 3 feet in diameter is suspended by heavy chains on which is roughly cut and burned, "Mt. Rainier National Park."

All Government trails in the park are well located and are in good repair. They are, however, entirely inadequate for its proper patrol and protection and a system of trails should be laid out and constructed at the earliest possible date. Heavily timbered portions of the park are now all but inaccessible, and in the event of fire great difficulty would be experienced in getting a fire-fighting crew, with necessary tools and provisions, to these inaccessible points. A trail should be constructed around the mountain at the lowest practicable elevation and from this main trail short trails should be built that would reach all parts of the park. With the trails now constructed it is believed that an expenditure of $10,000 would complete a very satisfactory system of trails and it is recommended that this amount be expended during the season of 1912. This trail system is considered to be the most important improvement to be made in the park.

Approximately, $1,700 has been expended from revenues during the season of 1911 for the construction of the Carbon River-Spray Park Trail and for the repair and improvement of other trails in the park, and a suspension pony bridge which will cost $800 is now being constructed over the Nisqually River near Longmire Springs. This bridge, with a span of 150 feet, will make more accessible the southeastern part of the park and the forest reserve which lies directly south of it, and is being constructed jointly by the Interior Department and the Forest Service.

The principal trails in the Nisqually River district are the Paradise Valley Trail, 6¼ miles in length, and the Indian Henry Trail, 6½ miles in length. These trails are well located and constructed and kept in good repair. There are also rough trails up the Tahoma and Kautz Forks, which enter Indian Henry's Hunting Ground 6 miles from the Government road. A trail should be constructed from the wagon bridge near the snout of Nisqually Glacier into Paradise Valley, a distance of 1¼ miles. A trail 3 miles in length was constructed during the season of 1910 to the open parks near the summit of Eagle Peak, which has an elevation of 6,000 feet and is made easily accessible by this trail. It leaves the Government road at Longmire Springs, crosses Nisqually River, and from the east bank ascends rapidly by switchbacks to the top of the ridge. As a very fine view may be obtained from Eagle Peak, the climb meets with favor among tourists. One mile of trail has been constructed to the top of the Ramparts. The Ramparts rise some 1,800 feet above Longmire Springs, and a very good view of the surrounding country may be had from this point.

In the Carbon and White River districts there are at present three trunk trails with their several branches: The Carbon River trail from Fairfax to the foot of the Carbon Glacier, with its branches to the northern part of the park via Chenuis Mountain, and the newly constructed trail to Spray Park via Cataract Basin; the trail which enters the reservation from the west via the Meadows and Crater Lake, continuing to Spray Park and connecting with the branch of the Carbon River trail at the head of Cataract Basin; and the trail which enters the park at the northeast corner and extends to the mining camps in the vicinity of White River. No Government funds have been expended in the construction or upkeep of this trail. There are two branches of this trail open to travel, both leading to the summit of the ridge to the north of White River, one via Sand Mountain and continuing to the head of Huckleberry Basin and Grand Park, and the other leaving the main trail at the old Knapp cabin, thence over the ridge to Lodi mine and down the creek basin to Grand Park. There is also a trail which leads from Lodi mine to the foot of Winthrop Glacier and Moraine Park. These trails are the result of mining operations and are not located as well as they might be for park purposes, but could, at no great expense, be put into condition for travel and patrol. The ice barrier which in former years occupied all of the space between the cliffs at the foot of Carbon Glacier is rapidly receding and in a short time a trail may be maintained there throughout the season, which will make more easily accessible Moraine Park and Winthrop Glacier from the Carbon Valley.

## RANGER CABINS.

There are three ranger cabins in the park. The gatekeeper's lodge on the Government road is a small log building. An addition has been built onto this cabin which serves for an office for the park superintendent. The cabin at Longmire Springs is a three-room log house with frame addition for kitchen. The cabin at the Carbon River Station has been properly finished and furnished during the past season but is only occupied during the summer months. A stable should be built at this station. A small log ranger cabin is now being built in Paradise Valley.

## PROSPECTING.

No known prospecting has been carried on in the park during the past season. Prior to the act of Congress of May 27, 1908, prohibiting the further location of mining claims in the park, several hundred locations were filed in the Carbon River and White River districts and about Glacier Basin. From various causes these have been reduced until at present there are in the districts mentioned about 60 prospects to which an active claim is asserted. Considerable development work has been done on some of the claims in the way of tunneling, road and trail construction, buildings, etc. Adverse proceedings have been instituted against a number of these locations during the past few months, and it is expected that the number will be greatly reduced by relinquishment or cancellation.

There are three groups of claims in the Nisqually district on which active operations are being carried on. These claims are in the vicinity of Longmire Springs. Development work consists of tunnels and buildings.

## TRAVEL.

During the 1911 season 10,006 visitors entered the park by way of the Government road. Of this number 4,600 were transient visitors and 5,406 remained three days or more. Three hundred visitors entered the park by way of Fairfax, 200 being campers who remained three days or more. The total number of visitors known to have entered the park during the season to date is 10,306. It is estimated that this number will be increased by probably 350 transient visitors before the season closes, most of whom will travel by automobile. Of the total number entering the park, 4,169 traveled by stage, 5,110 by automobile, 410 by wagon, 115 by motorcycle, 455 on foot, 20 by bicycle, and 27 on horseback.

There has been a substantial increase in travel during the past few seasons. In 1908 the number of visitors was 3,511 entered; in 1909 it was 5,968, in 1910 it was 7,830, and it is expected before the present season closes the register will show the names of 10,600 visitors. The summit of Mount Rainier was reached by 208 persons during the season just passed. The register which is kept in a steel box on the summit now shows the names of 1,012 persons who have been successful in making the ascent.

President Taft and party visited the park in automobiles October 8, 1911.

## GUIDES.

Four persons were authorized to act as guides in the park during the season of 1911, one of whom was not permitted to guide to the summit of Mount Rainier nor across any glacier. Those authorized to guide to the summit are mountaineers of known ability, and no accidents of a serious nature have occurred where parties have been accompanied by these official guides. On August 14, 1909, two men made the ascent from Paradise Valley and perished in a storm. It is believed they lost their lives while trying to cross the feeders of the White River Glacier. The bodies of these men have not been recovered, and in all probability will not be until the feeders of this glacier have moved to their terminal moraines. September 2, 1911, Leigh Garrett, a young man, attempted to ascend the mountain alone from Indian Henry's Hunting Ground, a route never used by experienced climbers, was caught in a storm, and perished. A search party consisting of Official Guide Joseph Stampfler, two park rangers, and two volunteers, followed Garrett's tracks to an elevation of 13,500 feet and believe at this point he was carried down the mountain side by an avalanche. His body will probably never be recovered. The search party was caught in a blizzard and compelled to remain on the mountain side all night.

While the present guiding system in the park is crude compared with that of the Swiss Alps, the number and class of tourists attempting the summit does not appear to warrant, at this time, a system and regulations that would add greatly to the expense of making the ascent, but the number in each party should be limited to eight persons. It has been planned to erect a stone shelter hut at Camp Muir, which is on the route to the summit at an elevation of 10,000 feet, and work on this hut would have been carried on during the past season had it not been that the snow fields were too badly broken up to admit of using horses for packing material and supplies up to the camp.

## FIRES.

July 14, 1911, a fire was started by lightning near Tolmie Peak, in the northwestern part of the park. A heavy rainstorm assisted in extinguishing this fire, and only a small amount of timber was damaged.

During the dry season of 1911 several small fires were discovered by rangers and extinguished before any damage was done.

## PATROL.

During the season of 1911 the ranger force consisted of five men, two of whom are regular rangers and on duty throughout the year. Three men were employed as temporary rangers, one of them being detailed as gatekeeper at the park entrance on the Government road and two for patrol duty in different parts of the park. A systematic patrol was maintained during the dry season and a vigilant watch kept by the entire ranger force for forest fires.

## GAME.

Wild animals are becoming more numerous in the park each year. In the watersheds of Puyallup, Mowich, and Carbon Rivers deer, bear, grouse, and ptarmigan are found in abundance, and on the higher ridges a great many mountain goat have been seen. The blasting necessary in constructing the Government road in the Nisqually district has, to some extent, driven the game from this district to the northern part of the park. There has been no hunting or killing of game in the park during the fiscal year of 1911.

Steps should be taken for setting aside a strip of land 3 miles wide in the forest reserve on all sides of the park as a game preserve, as the park animals become very tame during the summer months and when they cross the park lines to their feeding grounds in the fall they are killed by hunters. It is believed that elk would thrive in the park, and I wish to recommend that some of these animals be transferred to this park from the Yellowstone National Park. Elk are protected by State laws in Washington.

## BOUNDARIES.

The boundary line of the park was definitely established by a survey completed in the fall of 1908 by W. H. Thorn. A wire fence has been constructed along the western boundary north and south from the park entrance to prevent loose stock from entering the park at this point. The topographic survey which is now being made by the United States Geological Survey will probably not be completed until the summer of 1912.

## MINERAL SPRINGS.

The Longmire mineral springs are the only ones of any importance that have been discovered in the park. These springs are well known and are noted for their curative powers. The springs are located on patented land. Bathhouses have been built and attendants are employed during the tourist season.

## AUTOMOBILES.

During the 1911 season 757 automobile permits were issued and 1,053 machines entered the park. The speed limit in the park is 15 miles per hour, and at abrupt curves this is reduced, signs being placed at points along the road indicating the rate of speed allowed. Automobiles may use the Government road in the park during certain hours of the day. The rules and regulations governing their use of the road and admission into the park are rigidly enforced, and the disposition of most owners is to adhere to them without question. No accidents of a serious nature have occurred in the park.

The road is open to automobiles as far as Nisqually Glacier, and it is not considered safe to permit machines beyond this point until the road has been widened or passing places made which can be seen from one to the other.

## HOTELS AND CAMPS.

The hotels and tent camps have been entirely inadequate to accommodate tourists visiting the park during the season of 1911.

The National Park Inn is a three-story building located at Longmire Springs, is 125 feet long by 32 feet wide, contains 36 rooms, and by using 86 tents in connection will accommodate 225 guests. It was constructed during the spring of 1906 and was opened for business July 1 of that year. It is not properly constructed for a first-class hotel, and it is understood that the company contemplates erecting a more modern building before the opening of another season. A log clubhouse has recently been constructed near the main building. It is attractive in appearance and furnishings and is used as a recreation hall by the hotel guests. The tents used in connection with the hotel have board floors and walls, are equipped with doors and electric lights, and are well furnished. The hotel table is supplied from the commissary of the Chicago, Milwaukee & Puget Sound Railway at Tacoma and is satisfactory. A complete refrigerating plant is operated in connection with the hotel.

The Longmire Hotel, maintained on the Longmire patented tract at Longmire Springs, is a small frame building with 12 rooms. Tents are used in connection, and it is operated as a second-class hostelry and does a large business.

At Paradise Valley, a distance of 6½ miles by trail and 14 miles by road from Longmire Springs, a tent camp with 60 tents is maintained by John L. Reese. This camp is run at its full capacity during the months of July and August.

At Indian Henry's Hunting Ground, a distance of 6½ miles by trail from Longmire Springs, a tent camp with 15 tents is maintained by George B. Hall and does a good business.

The sanitary conditions at these camps are not satisfactory, and this defect can only be remedied by the construction of a sewer system or septic tanks.

## SPECIAL PERMITS.

The Tacoma Carriage & Baggage Transfer Co. operates a stage line in the park, using 28 head of horses, three 4-seated and four 3-seated stages from Longmire Springs to Paradise Valley, and between Ashford and Longmire Springs three 18-passenger automobile stages, one automobile for transporting express and baggage, and a freight wagon. This company conducts its business in a satisfactory manner, and the equipment is as good as may be expected, considering that its permit to operate in the park is granted only from year to year.

George B. Hall conducts a livery business at Longmire Springs and uses 37 saddle and pack horses and 13 driving horses. He operates three 3-seated stage wagons between Longmire Springs and Paradise Valley, and saddle and pack trains into Indian Henry's Hunting Ground, and gives satisfactory service.

A general photographic business is conducted in tents at Longmire Springs by Mr. L. G. Linkletter, who makes a specialty of taking photographs of parties, and carries in stock a good line of park views.

Permits to operate rented automobiles in and through the park were issued to Tacoma Touring Car Co., Tacoma Auto Livery Co., Ridgeway & Hathaway, and C. E. Wakefield.

Four persons were authorized by special permits to act as guides in the park during the season of 1911.

A special-use permit was granted the Tacoma Eastern Railroad Co. for the construction of a telephone line through the park. All connections were made, and the line was in operation to Longmire Springs June 10, 1911. It is well constructed, has been kept in good repair, and greatly facilitates operations in the park.

June 1, 1911, a five-year lease was made in favor of Fred George for a small strip of land at Longmire Springs on which to construct a building to be used in carrying on an ice cream, confectionery, and camp grocery business for the accommodation of tourists and others in the park. The building, which is well located and attractive in appearance, was completed July 1, and the business has been conducted in a satisfactory manner during the summer months.

## ESTIMATES AND RECOMMENDATIONS.

Estimates for the ensuing fiscal year are as follows: Salaries, $7,000; road maintenance, $10,000; trail construction, $10,000; for repair and improvement of trails, $500; protection from forest fires, $1,000; for widening the present road to 16 feet and macadamizing for its entire length, $145,000; for extending the road into Indian Henry's Hunting Ground, $60,000; for making a survey for a complete system of roads in the park, $25,000; total, $258,500.

The Government road now completed into Paradise Valley should be widened and improved before new roads are constructed, in order to make it safe for the combined traffic of stages and automobiles. The road should also be extended as surveyed and partially constructed 1 mile above its present terminus in Paradise Valley, and from a point 4 miles above Longmire Springs into Indian Henry's Hunting Ground. A survey should be made for a complete system of roads in the park with the object of extending the present road around the east and north sides of the mountain. When the survey is completed, or such portion of it as will enable construction work on the new road to be started, work may be commenced in the northwestern part of the park, thereby opening up the beautiful mountain parks on the north side of the mountain, and in the southeastern part to make connection with the road system of Yakima County. The road should be constructed at the lowest practicable elevation and if all points of interest can not be reached in this way, branch roads should be built to them. If the road is constructed at a high elevation it will be open for travel but a few weeks each year, as it will be buried in snow until late in the summer. A complete system of trails is very necessary and should be given immediate consideration. Four thousand one hundred feet of wire fence should be built in Paradise Valley and Indian Henry's Hunting Ground to form a pasture for loose stock in order that it may be kept from destroying the flora in these mountain valleys. The validity of all mining locations in the park should be ascertained and those not held in good faith canceled. All brush and refuse resulting from the construction of the Government road, mining operations, and from other causes should be burned during the wet season. Congressional action should be taken to protect the park by proper legislation from game trespass, and to provide a fine for the violation of the regulations in this respect promulgated by the Secretary of the Interior. It is further recommended that men employed to police the park be known as "park scouts," instead of rangers, in order to distinguish them from rangers employed in national forests.

Very respectfully,

EDW. S. HALL,
*Superintendent.*

The SECRETARY OF THE INTERIOR.

# RULES AND REGULATIONS.

## GENERAL REGULATIONS OF JUNE 10, 1908.

Pursuant to the authority conferred by the acts of Congress approved March 2, 1899, and May 27, 1908, the following rules and regulations for the government of the Mount Rainier National Park, in the State of Washington, are hereby established and made public:

1. It is forbidden to injure or disturb in any manner any of the mineral deposits, natural curiosities, or wonders on the Government lands within the park.

2. It is forbidden to cut or injure any timber growing on the park lands, or to deface or injure any Government property. Camping parties will be allowed to use dead or fallen timber for fuel.

3. Fires should be lighted only when necessary and completely extinguished when not longer required. The utmost care must be exercised at all times to avoid setting fire to the timber and grass.

4. Hunting or killing, wounding or capturing any bird or wild animal on the park lands, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed on the park lands under other circumstances than prescribed above, will be taken up by the superintendent and held subject to the order of the Secretary of the Interior, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof.

5. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook or line, is prohibited. Fishing for purposes of merchandise or profit is forbidden. Fishing may be prohibited by order of the superintendent in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

6. No person will be permitted to reside permanently, engage in any business, or erect buildings, etc., upon the Government lands in the park without permission, in writing, from the Secretary of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion. No pack trains will be allowed in the park unless in charge of a duly registered guide.

7. Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; such lands, however, shall have the metes and bounds thereof so marked and defined that they may be readily distinguished from the park lands. Stock may be taken over the park lands to patented lands with the written permission and under the supervision of the superintendent.

8. Hereafter the location of mining claims under the mineral-land laws of the United States is prohibited within the park. Persons

who have heretofore acquired in good faith rights to any mining location or locations shall not be permitted to injure, destroy, or interfere with the retention in their natural condition of any timber, mineral deposits, natural curiosities, or wonders within said park outside the boundaries of their respective mining claims duly located and held under the mineral-land laws.

9. The herding or grazing of loose stock or cattle of any kind on the Government lands in the park, as well as the driving of such stock or cattle over the same, is strictly forbidden, except in such cases where authority therefor is granted by the superintendent.

10. No drinking saloon or barroom will be permitted upon Government lands in the park.

11. Private notices or advertisements shall not be posted or displayed on the Government lands within the reservation, except such as may be necessary for the convenience and guidance of the public.

12. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the park and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

No lessee or licensee shall retain in his employ any person whose presence in the park shall be deemed and declared by the superintendent to be subversive of the good order and management of the reservation.

13. The superintendent designated by the Secretary is hereby authorized and directed to remove all trespassers from the Government lands in the park and enforce these rules and regulations and all the provisions of the acts of Congress aforesaid.

## REGULATIONS OF JUNE 10, 1908, GOVERNING THE IMPOUNDING AND DISPOSITION OF LOOSE LIVE STOCK

Horses, cattle, or other domestic live stock running at large or being herded or grazed in the Mount Rainier National Park without authority from the Secretary of the Interior will be taken up and impounded by the superintendent, who will at once give notice thereof to the owner, if known. If the owner is not known, notice of such impounding, giving a description of the animal or animals, with the brands thereon, will be posted in six public places inside the park and in two public places outside the park. Any owner of an animal thus impounded may, at any time before the sale thereof, reclaim the same upon proving ownership and paying the cost of notice and all expenses incident to the taking up and detention of such animal, including the cost of feeding and caring for the same. If any animal thus impounded shall not be reclaimed within thirty days from notice to the owner or from the date of posting notices, it shall be sold at public auction at such time and place as may be fixed by the superintendent after ten days' notice, to be given by posting notices in six public places in the park and two public places outside the park, and by mailing to the owner, if known, a copy thereof.

All money received from the sale of such animals and remaining after the payment of all expenses incident to the taking up, impounding, and selling thereof shall be carefully retained by the superintendent in a separate fund for a period of six months, during which time the net proceeds from the sale of any animal may be claimed by and paid to the owner upon the presentation of satisfactory proof of ownership, and if not so claimed within six months from the date of sale, such proceeds shall be turned into the Mount Rainier National Park fund.

The superintendent shall keep a record, in which shall be set down a description of all animals impounded, giving the brands found on them, the date and locality of the taking up, the date of all notices and manner in which they were given, the date of sale, the name and address of the purchaser, the amount for which each animal was sold and the cost incurred in connection therewith, and the disposition of the proceeds.

The superintendent will, in each instance, make every reasonable effort to ascertain the owner of animals impounded and to give actual notice thereof to such owner.

## REGULATIONS OF MARCH 29, 1911, GOVERNING THE ADMISSION OF AUTOMOBILES AND MOTORCYCLES.

Pursuant to authority conferred by the act of March 2, 1899 (30 Stat., 993), setting aside certain lands in the State of Washington as a public park, the following regulations governing the admission of automobiles and motorcycles into the Mount Rainier National Park, during the season of 1911, are hereby established and made public:

1. No automobile or motorcycle will be permitted within the metes and bounds of the Mount Rainier National Park unless the owner thereof secures a written permit from the superintendent, Edward S. Hall, Ashford, Washington, or his representative.

2. Applications for permits must show: (*a*) Name of owner, (*b*) number of machine, (*c*) name of driver, and (*d*) inclusive dates for which permit is desired, not exceeding one year, and be accompanied by a fee of $5 for each automobile and $1 for each motorcycle.

Permits must be presented to the superintendent or his authorized representatives at the park entrance on the Government road. The permittee will not be allowed to do a transportation business in the park without a special license therefor from the Secretary of the Interior.

3. The use of automobiles and motorcycles will be permitted on the Government road from the western boundary of Mount Rainier National Park to Longmire Springs between the hours of 7 a. m. and 8.30 p. m., but no automobile or motorcycle shall enter the park or leave Longmire Springs in the direction of the western boundary, later than 8 p. m.; the use of automobiles and motorcycles to be permitted on the Government road between Longmire Springs and the Glacier between the hours of 9 a. m. and 9.30 p. m., but no automobile or motorcycle shall leave Longmire Springs in the direction of Nisqually Glacier later than 7 p. m.

4. When teams, saddle horses, or pack trains approach, automobiles and motorcycles will take position on the outer edge of the roadway, regardless of the direction in which they are going, taking care that sufficient room is left on the inside for horses to pass.

5. Automobiles and motorcycles will stop when teams, saddle horses, or pack trains approach, and remain at rest until they have passed or until the drivers are satisfied regarding the safety of their horses.

6. Speed will be limited to 6 miles per hour, except on straight stretches where approaching teams, saddle horses, and pack trains

will be visible, when, if none are in sight, this speed may be increased to the rate indicated on signboards along the road; in no event, however, shall it exceed 15 miles per hour.

7. Signal with horn will be given at or near every bend to announce to approaching drivers the proximity of a machine.

8. Horses have the right of way, and automobiles and motorcycles will be backed or otherwise handled, as necessary, so as to enable horses to pass with safety.

9. All permits granted at any time when automobiles can enter the park will expire on December 31 of the year of issue.

All automobile and motorcycle regulations heretofore issued are canceled and revoked.

10. Violation of any of the foregoing rules, or the general regulations for the government of the park, will cause the revocation of permit; will subject the owner of the automobile or motorcycle to any damages occasioned thereby and to ejectment from the reservation, and be cause for refusal to issue a new permit to the owner without prior sanction in writing from the Secretary of the Interior.

## EXCERPT FROM AN ACT ENTITLED "AN ACT TO PROVIDE FOR DETERMINING THE HEIRS OF DECEASED INDIANS, FOR THE DISPOSITION AND SALE OF ALLOTMENTS OF DECEASED INDIANS, FOR THE LEASING OF ALLOTMENTS, AND FOR OTHER PURPOSES," APPROVED JUNE 25, 1910 (36 STAT., 857), PROVIDING PUNISHMENT FOR DEPREDATIONS AND FOR NOT EXTINGUISHING FIRES ON PUBLIC LANDS, ETC.

SEC. 6. That section fifty of the act entitled "An act to codify, revise, and amend the penal laws of the United States," approved March fourth, nineteen hundred and nine (Thirty-fifth United States Statutes at Large, page one thousand and ninety-eight), is hereby amended so as to read:

"SEC. 50. Whoever shall unlawfully cut, or aid in unlawfully cutting, or shall wantonly injure or destroy, or procure to be wantonly injured or destroyed, any tree, growing, standing, or being upon any land of the United States which, in pursuance of law, has been reserved or purchased by the United States for any public use, or upon any Indian reservation, or lands belonging to or occupied by any tribe of Indians under the authority of the United States, or any Indian allotment while the title to the same shall be held in trust by the Government, or while the same shall remain inalienable by the allottee without the consent of the United States, shall be fined not more than five hundred dollars or imprisoned not more than one year, or both."

That section fifty-three of said act is hereby amended so as to read:

"SEC. 53. Whoever shall build a fire in or near any forest, timber, or other inflammable material upon the public domain, or upon any Indian reservation, or lands belonging to or occupied by any tribe of Indians under the authority of the United States, or upon any Indian allotment while the title to the same shall be held in trust by the Government, or while the same shall remain inalienable by the allottee without the consent of the United States, shall, before leaving said fire, totally extinguish the same; and whoever shall fail to do so shall be fined not more than one thousand dollars or imprisoned not more than one year, or both."

# REPORT OF THE ACTING SUPERINTENDENT OF THE MESA VERDE NATIONAL PARK.

# REPORT OF ACTING SUPERINTENDENT OF MESA VERDE NATIONAL PARK.

OFFICE OF THE ACTING SUPERINTENDENT,
*Mancos, Colo., August 3, 1911.*

SIR: I have the honor to submit the following report on the management of the Mesa Verde National Park, for the year ended June 30, 1911.

## GENERAL STATEMENT.

This park was established by act of Congress approved June 29, 1906 (34 Stat., 616). It is situated in the extreme southwestern portion of the State of Colorado, in the county of Montezuma, and embraces an area of 66.2 square miles (42,376 acres). The park is under the control of the Secretary of the Interior, who, in pursuance of legal authority, has prescribed rules and regulations for the administration thereof.

## CHARACTER OF THE COUNTRY.

The principal geographic features of the park are the Rio Mancos, which cuts through it from northeast to southwest, forming a canyon from 1,000 to 2,000 feet in depth, and the Mesa Verde proper, which lies on both sides of this gorge, mostly on the northwestern side. The mesa is cut in shreds by narrow lateral canyons of great beauty, which present successions of huge promontories, sculptured ledges and bold and jagged cliffs. The Navajo, Ruin, Moccasin, and Ute Canyons are the principal ones which enter the Mancos from the north, with tributary canyons known as Garfield, Prater, Fewkes, Soda, and many others. These furnish the labyrinth of cliffs in the high and almost inaccessible recesses in which are found the abandoned homes of the ancient inhabitants. Fort Lewis, Grass, and Weber canyons enter the Mancos from the east, and these also contain many ancient ruins.

The altitude of the park is approximately 7,000 feet, the highest elevation being Point Lookout, on the northern rim, which, according to recent measurements of the United States Geological Survey, is 8,400 feet above sea level. The table-land slopes southward.

## LOCATION AND CHARACTER OF THE RUINS.

Within the jurisdiction of the park are approximately 400 ruins, of the type known as "Cliff Dwellings" and "Ancient Pueblos." These comprise by far the most remarkable group of ancient structures in the United States. For the protection and preservation of these invaluable remains of antiquity the Mesa Verde National Park was established.

The principal and most accessible ruins are the Spruce Tree House, located near the head of Navajo Canyon, the Cliff Palace, about 2 miles east of Spruce Tree House, located in branch of Cliff Canyon and reputed to be one of the most famous works of prehistoric man in existence, and Balcony House, a mile east of the Cliff Palace, in Cliff Canyon. The United States Geological Survey has nearly completed a topographical map of the park, which, when finished, will give the exact location of each ruin of importance in the reservation.

## CUSTODIANSHIP.

The custodianship of the park is delegated by the Secretary of the Interior to the superintendent, whose offices are maintained in Mancos, Colo., the nearest town to the park having railroad facilities. The superintendent is assisted in the discharge of his duties by park rangers, who act as guides for tourists and police the park.

Mr. Hans M. Randolph, former superintendent of the park, severed his connection with the service April 19, 1911, and under designation by the Secretary of the Interior I entered on duty as acting superintendent of the reservation May 13, 1911.

## ORDER.

A high standard of order has been maintained in the park since it became a Federal reservation. Prior to that time many of the cliff dwellings were broken into by tourists and curiosity seekers in search of pottery, arrowheads, and other relics of the ancient inhabitants.

## MOVEMENTS OF STOCK.

Cattle and sheep belonging to owners of patented claims upon the mesa have been moved up from the Southern Ute Indian Reservation and other points in the valleys to the summer range on the mesa. The park contains excellent grazing tracts, and under the provisions of the act of Congress approved June 25, 1910, providing for the development of the resources of the park, grazing permits have been issued by the department at reasonable rates, for this pasturage. The proceeds will be turned into the Treasury, as provided by the legislation mentioned.

## ROADS AND TRAILS.

During the past year the main wagon-road construction, under the direction of my predecessor, was completed to station No. 166, about 3½ miles from Point Lookout. On May 6, 1911, under instructions from the department, proposals were asked for the construction of additional road and the cleaning out and repair of the constructed road. Bids were opened June 2, 1911, and the road-work contract awarded to Mr. Nathaniel A. Decker, of Mancos, the lowest bidder. This contract provides for further road construction from station 166 to station 343, following the line of survey heretofore run. The contractor is now actively engaged upon the undertaking, and it is expected that the portion under contract will be finished by the close of the present summer.

The equipment purchased by the Government for the maintenance of a road camp, together with all machinery and tools owned by the Government and used in previous years on the road work, has been turned over to the contractor for his use on the work, in accordance with the terms of the contract.

Upon the completion of that portion of the road now under contract, there will remain to be constructed, in order to connect with that portion heretofore built northward from Spruce Tree House 6 miles 700 feet along the line of the Mills survey. The cost of this latter work has been estimated at $6,900. Upon the completion of this work, the entire route to the ruins will be traversable by wagons. The road heretofore constructed, however, from the base of Point Lookout to Praters Canyon, which portion is cut into the steep and precipitous sides of the mesa through soft soil, shale, and sandrock, must be widened and surfaced with crushed rock to make the same solid and safe for tourist travel. The insecure foundation of the present roadbed between these points permits slides and caving in rainy seasons, necessitating continuous repair work to make it passable. It must be borne in mind that this highway ascends to a great height, the steep rim rock of the mesa towering for hundreds of feet above on the inside, with an abrupt and nearly perpendicular descent of a thousand feet or more on the outside rim. If the park is to be developed in such a manner that a heavy influx of tourists and visitors is to be reasonably expected, this road must be put in such condition that vehicles of all descriptions, including coaches and automobiles, may traverse it with safety. In addition to the widening and surfacing above mentioned, all threatening rock and earth formations on the heights above the road should be blown out and removed. When this is done, the Mesa Verde National Park will contain a safe and substantial road, and a scenic highway of remarkable beauty, which will open the door, so long locked by the fastnesses of the wilderness, to the mystic and fascinating country of the cliff dwellers.

## WATER SUPPLY.

The springs at Spruce Tree and Balcony houses yield a supply of excellent water sufficient for present needs, but a further water supply must be developed at the ruins to meet the increased travel which will undoubtedly follow the completion of the main wagon road. A geological examination should be made with a view to developing artesian water to meet the future demand. Wells have been dug and windmills constructed in Prater and Ruin canyons along the line of survey of the road, and these should supply the water needed during the building of the highway and supply the needs of tourists en route to the ruins.

## TRAVEL.

During the past year 206 visitors have registered at Spruce Tree House camp. No heavy traffic can be reasonably anticipated until the wagon road is finished, as the present horseback trip necessarily involved in the journey to the ruins deters many who, by reason of age, infirmity, or lack of physical stamina, are wholly unable to undergo the strain of the trip over the rough mountain trails.

## EXCAVATION AND REPAIR.

The work of excavation and repair on Cliff Palace and Spruce Tree house under Federal appropriations has been completed, and further work along these lines on other ruins will be deferred until the wagon road is constructed, the latter being regarded as the most urgent need of the park.

During the fall of 1910, Prof. Edgar L. Hewett, director of the School of American Archæology, Archæological Institute of America, in conjunction with Mr. Nusbaum, constructor of the institution, made a preliminary study of the conditions of the Balcony House, which showed that the work of excavating would be comparatively small, but that the work necessary to preserve the remaining walls from further deterioration would be very difficult. It was found that the principal remaining walls of the Balcony House had been badly shattered and weakened by shocks occasioned by stone falling from the roof of the cavern, as well as by the operations of vandals in years past. These gentlemen, after fully considering the condition of these walls, deemed it best to secure the services of a consulting constructor and an expert stonemason before proceeding with the work. It was not their purpose to attempt to do more in the way of restoration than was absolutely necessary to prevent further deterioration. For the preservation of the walls that were found to be in a dangerous condition, the constructors agreed upon a system of supports by means of angle irons, which, while probably slightly out of place in connection with ruins of this character, would make the walls as secure as would anything else.

The work of repairs on Balcony House was made possible through the setting aside by the Colorado Cliff Dwellers' Association, of which Mrs. Virginia McClurg is regent general, the sum of $1,000, which this department augmented by the allotment of $500 from the park appropriation. A detailed report of this work, it is understood, will be published by the American Institute of Archæology.

## LANDS.

The negotiations with the Southern Ute Indians looking to an exchange of lands whereby the United States is to acquire title to that portion of the Southern Ute Indian Reservation containing the prehistoric ruins of importance, in exchange for grazing lands suitable to the Indians, were concluded during the past year. A treaty has been negotiated with the Southern Utes, a majority of the Indians signing the same, whereunder the Government takes the following-described land:

> Beginning on the range line between ranges 14 and 15 west, in township 34½ north, where the same intersects the north boundary of the Southern Ute Indian Reservation; thence due south 3 miles and 60 chains to the southeast corner; thence due west 5 miles and 40 chains to the southwest corner; thence due north 3 miles and 60 chains to the intersection of the north boundary of the Southern Ute Indian Reservation; thence due east 5 miles and 40 chains along the said north boundary of the Southern Ute Indian Reservation to the northeast corner and place of beginning, containing 12,760 acres.

For this tract the Government has agreed to give the Indians a tract lying west of the present park 2½ miles north and south and 4 miles east and west, containing about 6,000 acres, and a second tract in townships 34½ and 35 north, range 17 west, lying along the old reservation line and just south of the Ute Mountain, containing about 19,000 acres.

The provisions of this treaty will be carried into effect upon its ratification by Congress.

No unperfected entries within the park now remain. The patented holdings therein are as follows:

*Patented holdings in Mesa Verde National Park*

[All in T. 35 N., R. 14 W., N. M. P. M.]

| | Acres. |
|---|---|
| H. E. 915, made Feb. 20, 1900, by Albert Prater, for SE. ¼ SE. ¼, sec. 18, E. ½ NE. ¼, NE. ¼ SE. ¼, sec. 19, patented Nov. 14, 1905 | 160 |
| H. E. 0939, made Mar. 19, 1900, by Mabyn Morefield (now Armstrong), for E. ½ NW ¼, E. ½ SW. ¼, sec. 20, patented Aug. 25, 1910 | 160 |
| C. E. 339, made Apr. 10, 1889, by Frederick Richards, for NE. ¼ SW. ¼, sec. 26, patented July 14, 1891 | 40 |
| C. E. 395, made Oct. 15, 1889, by George M. Comfort, for NE. ¼ NW. ¼, sec. 26, patented July 14, 1891 | 40 |
| H. E. 0354, made Sept. 11, 1903, by Ellen Elizabeth Waters, for W. ½ NE. ¼ and W. ½ SE. ¼, sec. 28, patented May 15, 1911 | 160 |
| H. E. 1021, made Feb. 16, 1900, by William F. Prater, for SE. ¼ SE. ¼, sec. 19, and E. ½ NE. ¼, NE. ¼ SE. ¼, sec. 30, patented Aug. 10, 1906 | 160 |
| Total | 720 |

The entire area of the park is under coal withdrawal by Executive order of July 7, 1910.

## DEVELOPMENT OF RESOURCES.

By a provision of the urgent deficiency act of June 25, 1910 (contained in an excerpt set out in the appendix to this report) the Secretary of the Interior is empowered to grant leases and permits for the development of the natural resources of the Mesa Verde National Park, the funds derived therefrom to be covered into the Treasury of the United States.

Pursuant thereto, on January 21 and 23, 1911, coal-mining leases were entered into by the Government, with William John Jordan and George S. Todd, respectively, of Cortez, Colo., covering certain tracts in the western portion of the park. These leases, which are identical, provide in substance for coal mining at a royalty of 10 cents per ton per mine run, the lessees paying as advance royalty the sum of $50 each for the first year and $100 each annually for succeeding years, the term of the leases being six years.

Since the making of the above leases the mine opened by Mr. Todd has been supplying the town of Cortez, the county seat of Montezuma County, with fuel. An opening has been made in the rim rock of the mesa, approximately 2,200 feet above the Cortez Plain, and the coal taken out is of good quality; 260 tons have been produced from this mine up to July 1, 1911.

The tract covered by the Jordan lease has not as yet produced coal in merchantable quantities, but such production is to be reasonably anticipated upon the completion of the mine road now under construction by Mr. Jordan and the installation of a tramway, for which negotiations are being made by the lessee.

## RECOMMENDATIONS.

### BOUNDARIES.

In view of the consummation of the recent treaty with the Utes, and in the event of its ratification by Congress, whereunder the Government will acquire jurisdiction over the tract embracing the most notable and important ruins, I recommend that Federal control over the 5-mile strip surrounding the park be relinquished, as this territory contains no ruins of magnitude or unusual importance, and it is wholly impossible to properly police the same with the present limited ranger force.

### ROAD BUILDING.

I most earnestly recommend that every effort be put forth to secure an appropriation sufficient to complete the main wagon road above mentioned and to widen, repair, and surface that portion heretofore constructed. The completion of this highway is imperatively necessary to make the cliff dwellings accessible to the general public. The amount requested in the estimates embodied herein is not believed to be excessive, but entirely justified by the value and importance of this reservation.

### BUILDINGS.

I renew prior recommendations that a suitable building be constructed at Spruce Tree House which will serve as a headquarters for the proper supervision of the ruins and, if necessary, for the accommodation of travelers. At the present time visitors are housed in tents, which, though comfortable and sufficient for present needs, will probably be inadequate to accommodate the increased travel which the future development of the park will bring. The house when built should be connected by telephone with Mancos. This will involve the construction of approximately 15 miles of telephone line to connect with the line on the Mancos-Cortez highway at or near Point Lookout. This work has been estimated at $125 a mile.

### PRIVATE HOLDINGS.

It is again recommended that as soon as appropriations for such purpose can be secured, all private holdings be eliminated by purchase. The presence of these holdings, however, has in no way embarrassed the administration of the park and this matter may well be deferred until the more pressing needs of the park are satisfied.

### ESTIMATES.

I have the honor to recommend that an appropriation covering the following amounts, be requested of Congress for the fiscal year ending June 30, 1913:

| | |
|---|---|
| Administration expenses, including superintendent's, rangers', and clerk's salaries | $5,000 |
| Incidental office expenses | 300 |
| Telephone service (including proposed park line) | 75 |
| Office rent | 240 |
| Completion of main wagon road from stake No. 343 to stake No. 668 (local contractor's estimate) | 7,000 |
| Widening and surfacing constructed road and blasting out earth and rock formations above roadbed (estimate of Geological Survey engineers, subject to further engineering investigation) | 20,000 |
| Repair and maintenance of roads leading from county highway to north boundary of park and traversing public lands, connecting with Mesa Verde Park road at Station O | 1,500 |
| Custodian's house | 3,500 |
| Construction of telephone line in park | 3,000 |
| Contingent expenses, including maintenance of team | 1,000 |
| Total | 41,615 |

Very respectfully,

RICHARD WRIGHT,
*Acting Superintendent.*

The SECRETARY OF THE INTERIOR.

# APPENDIX.

## ACT OF JUNE 29, 1906 (34 STAT., 616), CREATING THE MESA VERDE NATIONAL PARK.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That there is hereby reserved from settlement, entry, sale, or other disposal, and set apart as a public reservation, all those certain tracts, pieces, and parcels of land lying and being situate in the State of Colorado, and within the boundaries particularly described as follows: Beginning at the northwest corner of section twenty-seven, township thirty-five north, range sixteen west, New Mexico principal meridian; thence easterly along the section lines to the southwest corner of the southeast quarter of section twenty, township thirty-five north, range fifteen west; thence northerly to the northwest corner of the southeast quarter of said section; thence easterly to the northeast corner of the southeast quarter of said section; thence northerly to the northwest corner of section twenty-one, said township; thence easterly to the northeast corner of the northwest quarter of said section; thence northerly to the northwest corner of the southeast quarter of section sixteen, said township; thence easterly to the northeast corner of the southeast quarter of section fifteen, said township; thence southerly to the southeast corner of said section; thence easterly to the southwest corner of section thirteen, said township; thence northerly to the northwest corner of the southwest quarter of said section; thence easterly to the northeast corner of the southwest quarter of said section; thence northerly to the northwest corner of the northeast quarter of said section; thence easterly to the northeast corner of said section; thence northerly to the northwest corner of the southwest quarter of section seven, township thirty-five north, range fourteen west; thence easterly to the northeast corner of the southwest quarter of said section; thence northerly to the northwest corner of the southeast quarter of section six, said township; thence easterly to the northeast corner of the southwest quarter of section four, said township; thence southerly to the northwest corner of the southeast quarter of section nine, said township; thence easterly to the northeast corner of the southeast quarter of said section; thence southerly to the northwest corner of section twenty-two, said township; thence easterly to the northeast corner of the northwest quarter of said section; thence southerly to the northwest corner of the southeast quarter of said section; thence easterly to the northeast corner of the southeast quarter of said section; thence southerly to the northwest quarter of section twenty-six, said township; thence easterly to the northeast corner of the northwest quarter of said section; thence southerly to the southeast corner of the southwest quarter of section thirty-five, said township; thence easterly to the northeast corner of section two, township thirty-four north, range fourteen west; thence southerly along the section line between sections one and two and between sections eleven and twelve to the northern boundary of the southern Ute Indian Reservation; thence westerly along the northern boundary of said reservation to the center of section nine, township thirty-four north, range sixteen west; thence northerly along the quarter-section lines to the northwest corner of the southeast quarter of section twenty-eight, township thirty-five north, range sixteen west; thence easterly to the northeast corner of the southeast quarter of said section; thence northerly to the northwest corner of section twenty-seven, said township, the place of beginning.

SEC. 2. That said public park shall be known as the Mesa Verde National Park, and shall be under the exclusive control of the Secretary of the Interior, whose duty it shall be to prescribe such rules and regulations and establish such service as he may deem necessary for the care and management of the same. Such regulations shall provide specifically for the preservation from injury or spoliation of the ruins and other works and relics of prehistoric or primitive man within said park: *Provided*, That all prehistoric ruins that are situated within five miles of the boundaries of said park, as herein described, on Indian lands and not on lands alienated by patent from the ownership of the United States, are hereby placed under the custodianship of the Secretary of the Interior, and shall be administered by the same service that is established for the custodianship of the park.

SEC. 3. That the Secretary of the Interior be, and he is hereby, authorized to permit examinations, excavations, and other gathering of objects of interest within said park by any person or persons whom he may deem properly qualified to conduct such examinations, excavations, or gatherings, subject to such rules and regulations as he may prescribe: *Provided always*, That the examinations, excavations, and gatherings are undertaken only for the benefit of some reputable museum, university, college, or other recognized scientific or educational institution, with a view to increasing the knowledge of such objects and aiding the general advancement of archæological science.

SEC. 4. That any person or persons who may otherwise in any manner willfully remove, disturb, destroy, or molest any of the ruins, mounds, buildings, graves, relics, or other evidences of an ancient civilization or other property from said park shall be deemed guilty of a misdemeanor, and upon conviction before any court having jurisdiction of such offenses shall be fined not more than one thousand dollars or imprisoned not more than twelve months, or such person or persons may be fined and imprisoned, at the discretion of the judge, and shall be required to restore the property disturbed, if possible.

## RULES AND REGULATIONS.

### General Regulations of March 19, 1908.

Pursuant to authority conferred by the act of Congress approved June 29, 1906, the following rules and regulations for the government of the Mesa Verde National Park, in Colorado, are hereby established and made public and extended as far as applicable to all prehistoric ruins situated within 5 miles of the boundaries thereof on Indian and public lands not alienated by patent from the ownership of the United States:

1. It is forbidden to injure or disturb, except as herein provided, any of the mineral deposits, natural curiosities, wonders, ruins, and other works and relics of prehistoric or primitive man, on Government lands within the park or the ruins, and other works or relics of prehistoric man on Government lands within 5 miles of the boundaries of the park.

2. Permits for the examination of ruins, the excavation of archæological sites, and the getting of objects of antiquity will, upon application to the Secretary of the Interior through the superintendent of the park, be granted to accredited representatives of reputable museums, universities, colleges, or other recognized scientific or educational institutions, with a view to increasing the knowledge of such objects and aiding the general advancement of archæological science, under the conditions and restrictions contained in present or future regulations promulgated by the Secretary of the Interior to carry out the provisions of the act of Congress approved June 8, 1906, entitled "An act for the preservation of American antiquities."

3. Persons bearing archæological permits from the department may be permitted to enter the ruins unaccompanied after presenting their credentials to the superintendent or other park officer. Persons without archæological permits who wish to visit and enter the ruins shall in all cases be accompanied by a park ranger or other person duly authorized by the superintendent.

4. The superintendent is authorized, in his discretion, to close any ruin on Government lands within the park or the 5-mile limit to visitors when it shall appear to him that entrance thereto would be dangerous to visitors or might result in injury to walls or other insecure portions thereof, or during repairs.

5. The superintendent is authorized, in his discretion, to designate the place or places to be used by campers in the park and where firewood can be obtained by them. All garbage and refuse must be deposited in places where it will not be offensive to the eye or contaminate any water supply on the park lands.

6. It is forbidden to cut or injure any timber growing on the park lands, except as provided in paragraph 5 of these regulations, but dead or fallen timber may be taken by campers for fuel without obtaining permission therefor.

7. Fires should be lighted only when necessary and completely extinguished when not longer required. The utmost care must be taken at all times to avoid setting fire to the timber and grass.

8. Hunting or killing, wounding or capturing, any bird or wild animal on the park lands, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed on the park lands under other circumstances than those prescribed above, will be taken up by the superintendent and held subject to the order of the Secretary of the Interior, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation and the actual owner thereof

was not a party to such violation. Firearms will be permitted in the park only on written permission from the superintendent.

9. No person shall be permitted to reside permanently or to engage in any business on the Government lands in the park without permission, in writing, from the Secretary of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion, and no pack trains will be allowed in the park unless in charge of a duly registered guide.

10. Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; such lands, however, shall have the metes and bounds thereof so marked and defined as to be readily distinguished from the park lands. Stock may be taken over the park lands to patented lands with the written permission and under the supervision of the superintendent.

11. The herding or grazing of loose stock or cattle of any kind on the Government lands within the park, as well as the driving of such stock or cattle over the same, is strictly forbidden, except in such cases where authority therefor is granted by the superintendent.

12. The sale of intoxicating liquors on the Government lands in the park is strictly forbidden.

13. Private notices or advertisements shall not be posted or displayed on the Government lands within the park, nor upon or about ruins or Government lands within the 5-mile strip surrounding the same, except such as may be necessary for the convenience and guidance of the public.

14. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who may violate any of the foregoing rules, will be summarily removed from the park and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

15. The act creating the park provides that any person or persons who may, without having secured proper permission from the Secretary of the Interior, willfully remove, disturb, destroy, or molest any of the ruins, mounds, buildings, graves, relics, or other evidences of an ancient civilization or other property in said park shall be deemed guilty of a misdemeanor, and upon conviction before any court having jurisdiction of such offenses shall be fined not more than $1,000 or imprisoned not more than twelve months, or such person or persons may be fined and imprisoned, at the discretion of the court, and shall be required to restore the property destroyed, if possible.

Any person or persons guilty of such vandalism upon Government land within the 5-mile strip will be liable to a penalty of $500 or imprisonment of not more than ninety days, or both, in the discretion of the court, as provided in the act of Congress approved June 8, 1906, entitled "An act for the preservation of American antiquities."

16. The superintendent designated by the Secretary of the Interior is hereby authorized and directed to remove all trespassers from the Government lands in the park and to enforce these rules and regulations and all the provisions of the act of Congress creating the same.

The Indian police and field employees of the General Land Office are required to cooperate with the superintendent in the enforcement of these regulations as regards the 5-mile strip surrounding the park.

## Regulations of March 19, 1908, Governing the Impounding and Disposition of Loose Live Stock.

Horses, cattle, or other domestic live stock running at large or being herded or grazed on the Government lands in the Mesa Verde National Park without authority from the superintendent of the park will be taken up and impounded by the superintendent, who will at once give notice thereof to the owner, if known. If the owner is not known, notice of such impounding, giving a description of the animal or animals, with the brands thereon, will be posted in six public places inside the park and in two public places outside the park.

Any owner of an animal thus impounded may, at any time before the sale thereof, reclaim the same upon proving ownership and paying the cost of notice and all expenses incident to the taking up and detention of such animal, including the cost of feeding and caring for the same. If any animal thus impounded should not be reclaimed within 30 days from notice to the owner or from the date of posting notices, it shall be sold at public auction at such time and place as may be fixed by the superintendent after 10 days' notice, to be given by posting notices in six places in the park and two public places outside of the park, and by mailing to the owner, if known, a copy thereof.

All money received from the sale of such animals and remaining after the payment of all expenses incident to the taking up, impounding, and selling thereof shall be carefully retained by the superintendent in a separate fund for a period of six months, during which time the net proceeds from the sale of any animal may be claimed by and paid to the owner upon the presentation of satisfactory proof of ownership; and if not so claimed within six months from the date of sale, such proceeds shall be turned into the Mesa Verde National Park fund.

The superintendent shall keep a record in which shall be set down a description of all animals impounded, giving the brands found on them, the date and locality of the taking up, the date of all notices and manner in which they were given, the date of sale and the name and address of the purchaser, the amount for which each animal was sold and the cost incurred in connection therewith, and the disposition of the proceeds.

The superintendent shall in each instance make every reasonable effort to ascertain the owner of animals impounded and give actual notice thereof to such owner.

## PUNISHMENT FOR DEPREDATIONS AND FOR NOT EXTINGUISHING FIRES ON PUBLIC LANDS, ETC.

[Excerpt from an act entitled "An act to provide for determining the heirs of deceased Indians, for the disposition and sale of allotments of deceased Indians, for leasing of allotments, and for other purposes," approved June 25, 1910 (36 Stat., 857).]

SEC. 6. That section fifty of the act entitled "An act to codify, revise, and amend the penal laws of the United States," approved March fourth, nineteen hundred and nine (Thirty-fifth United States Statutes at Large, page one thousand and ninety-eight), is hereby amended so as to read:

SEC. 50. Whoever shall unlawfully cut, or aid in unlawfully cutting, or shall wantonly injure or destroy, or procure to be wantonly injured or destroyed, any tree, growing, standing, or being upon any land of the United States which, in pursuance of law, has been reserved or purchased by the United States for any public use, or upon any Indian reservation or lands belonging to or occupied by any tribe of Indians under the authority of the United States, or any Indian allotment while the title to the same shall be held in trust by the Government, or while the same shall remain inalienable by the allottee without the consent of the United States, shall be fined not more than five hundred dollars or imprisoned not more than one year, or both.

That section fifty-three of said act is hereby amended so as to read:

SEC. 53. Whoever shall build a fire in or near any forest, timber, or other inflammable material, upon the public domain, or upon any Indian reservation, or lands belonging to or occupied by any tribe of Indians under the authority of the United States, or upon any Indian allotment while the title to the same shall be held in trust by the Government, or while the same shall remain inalienable by the allottee without the consent of the United States, shall, before leaving said fire, totally extinguish the same; and whoever shall fail to do so shall be fined not more than one thousand dollars or imprisoned not more than one year, or both.

## EXCERPT FROM THE DEFICIENCY APPROPRIATION ACT APPROVED JUNE 25, 1910.

The Secretary of the Interior may, upon terms and conditions to be fixed by him, grant leases and permits for the use of the land or development of the resources thereof in the Mesa Verde National Park, and the funds derived therefrom shall be covered into the Treasury of the United States: *Provided*, That such leases or grants shall not include any of the prehistoric ruins in said park or exclude the public from free or convenient access thereto; for necessary expenses hereunder there is appropriated the sum of two thousand dollars, to continue available during the fiscal year nineteen hundred and eleven.

## EXCERPT FROM ACT OF MARCH 4, 1911, MAKING APPROPRIATION FOR MESA VERDE PARK FOR FISCAL YEAR 1912.

Mesa Verde National Park, Colorado: For protection and improvement of Mesa Verde National Park, Colorado, including the lands within five miles of the boundaries of said reservation, which under the act of June twenty-ninth, nineteen hundred and six, are to be administered by the same service established for the custodianship of the park, seven thousand five hundred dollars.

# REPORT OF THE SUPERINTENDENT OF THE CRATER LAKE NATIONAL PARK.

# REPORT OF THE SUPERINTENDENT OF THE CRATER LAKE NATIONAL PARK.

Crater Lake, Oreg.,
*October 1, 1911.*

Sir: I have the honor to submit the following report of the conditions and the administration of the affairs in the Crater Lake National Park since July 1, 1910:

## GENERAL STATEMENT.

The Crater Lake National Park was created by act of Congress approved May 22, 1902. It is situated in Klamath County, Oreg., and has an area of 249 square miles, or 159,360 acres.

Crater Lake is near the summit of the Cascade Range, in the crater of an extinct volcano which is estimated to have been more than 16,000 feet high. The lake, which is practically in the center of the park, is approximately 6 miles long and 4 miles wide, and has a water surface of 20¼ square miles. The lake is 6,177 feet above sea level and the depth of the water is 2,001 feet. The almost vertical walls of the great caldera in which the lake is situated rise from 1,000 to 2,000 feet above the surface of the water.

Crater Lake was first discovered by John Hilman, the leader of a party of gold hunters, on June 12, 1853, and was next seen by white men October 1, 1862, by Chauncey Nye and his party of prospectors and miners. It was known by some of the officers and enlisted men of Fort Klamath, Oreg., as early as 1865, but did not come into much prominence until about 1885, since which time many thousands of visitors and admirers have been attracted to its shores by its beauty and grandeur.

Crater Lake is 498 miles north of San Francisco, Cal., and is reached by way of the Southern Pacific Railroad, 436 miles, to Klamath Falls, Oreg., thence by steamer across Klamath Lake to Agency Landing, thence by automobile or team via Fort Klamath. The lake is 62 miles from Klamath Falls and 22 miles from Fort Klamath.

The Crater Lake National Park is 416 miles south of Portland, Oreg., and is reached by way of the Southern Pacific Railroad to Medford, 332 miles, or to Ashland, 344 miles; thence by automobile or team.

The lake is 84 miles from Medford and 96 miles from Ashland.

## IMPROVEMENT WORK.

At the beginning of the season of 1910 lumber and other necessary building materials were purchased and the work of repairing the buildings which were found to be so badly damaged in the spring of 1909 was resumed. This work was done in the most substantial manner possible.

At the beginning of the season, and while the work of repairing the buildings was being carried on, all the roads, trails, and bridges were put in the best condition possible with the very small working force available.

As before, the appropriation for the protection and improvement of the park for the fiscal year 1911 (season of 1910) was very small, and the improvement work was necessarily limited in extent.

During the previous season no new bridges were built and not a great amount of repair work upon the existing ones was necessary. No new fences were built during that season, but those fences inclosing pasture and necessary lots and corrals were repaired.

At the beginning of October, 1910, the tourist travel in and through the park was almost ended for the season, as the weather became stormy and cold. About the 1st of the month the general work of the season was discontinued, though the usual work of removing the flooring from the bridges in order to prevent them from being broken down by snow, and of preparing the buildings, fences, and gates, and other property for the winter was carried on. This work was completed during November. All the buildings were securely closed, the boat on the lake and all the tools were safely stored, and all other property was put in the best possible condition for the winter. On November 22, the snow being 2½ feet deep and still falling, and all the roads in or through the park being closed to travel, I moved to my winter quarters at Klamath Falls, arriving there on November 26. The snow at this latter date was not less than 8 feet deep at the headquarters in the park.

In May, 1911, I made a trip into the park to look after the property of the park and to try to find some trace, if possible, of the lost photographer, B. B. Bakowski. The buildings, bridges, and other property of the reserve were found to be in as good condition as could reasonably be expected.

During the past winter the snow was very deep in the park, but the buildings were not injured, as they had been strongly rebuilt after having been damaged by the deep snows of 1909.

On June 5 I returned to Klamath Falls from the trip into the park, and later in the same month I again went into the reserve to ascertain the conditions in regard to the snow disappearing and the prospects for getting up to the headquarters for the season's work.

During a portion of June a man with a team was employed in clearing the roads of the logs and trees which had fallen during the winter months.

During the past spring and summer the snow remained longer than usual and consequently both the tourist season and the working season opened later. There was no tourist travel in the park until the middle of July.

During July the roads, trails, and bridges were repaired by a small force of men, and by the end of the month they were in fairly good condition for the tourist travel of the season.

During August the improvement work was continued upon the roads, trails, and bridges, and some slight repairs were made upon the buildings and fences. Some time and labor were expended in patrolling portions of the park and in extinguishing some small forest fires which had become started during the exceedingly dry weather.

On September 4, by direction from the department, I started on a trip to the Yellowstone National Park to attend a conference of national park superintendents and others. I returned to my post of duty in this reserve on September 20.

## VISITORS.

During the season of 1909 about 5,000 persons visited the reserve; during the season 1910 there would have been as many or more if visitors had not been kept away by the supposed danger from the forest fires in the adjacent mountains and by the fact that the smoke made it impossible to obtain a good view of the lake and other scenery. Up to October 1, 1910, 3,746 names were registered, but there were probably many more persons in the reserve, as the one park ranger whose duty it was to attend to the registering of names was compelled to give a great portion of his time to guarding against damages by the forest fires.

Although the tourist season of 1911 opened later than any previous one, the number of visitors will probably be almost as great as ever before. Up to October 1 there were 3,946 persons registered; the number that have been missed and have from one cause or another failed to register would probably bring the total to 4,500.

## CONCESSIONS.

There are at the present time but three concessions held in the park—two by the Crater Lake Co. and one by the Klamath Telephone & Telegraph Co.

The Klamath Telephone & Telegraph Co. operates a telephone line in and through the park. This line was kept in good condition and was conducted according to the terms of the contract with the department. This line extends from Fort Klamath to the superintendent's headquarters and office and the hotel at Camp Arant, and is connected with the hotel at the rim by a private line owned by the Crater Lake Co.

The other two concessions in the reserve were held by the Crater Lake Co., one for maintaining and operating hotels and operating launches and rowboats upon Crater Lake and one for the transportation of passengers in and through the reserve in automobiles.

One of the hotels owned and operated by this company is situated upon the rim of the crater of Crater Lake. During the last season guests were housed in a temporary wooden building, but the company has under course of construction a fine permanent building, composed of stone and concrete. This will probably be completed during the season of 1912. The other hotel of this company is situated at Camp Arant, near the superintendent's headquarters, 5 miles below the lake. Both of these hotels have rendered satisfactory service; 716 guests were accommodated during the season of 1910 and 1,291 during the season of 1911.

This company has one good launch and a number of rowboats on the lake; and the excursions made with them have been a pleasing feature of a visit to the park. Another fine launch is being constructed.

During the season of 1911 this company has had three licensed automobiles making daily round trips from outside points into and through the park, and up to October 1 had carried a total of 190 passengers.

## AUTOMOBILES.

During July there were issued 59 automobile permits at $1 each for a single round trip through the park and two permits at $5 each and one permit for three automobiles at $10 for each machine for permission to run upon the roads during the entire season of 1911. During August 142 single-trip permits and one season permit were issued. During September 67 single-trip permits were issued.

## LOOSE STOCK DRIVEN THROUGH THE PARK.

During the season of 1910 a small herd of loose cattle was driven through the park, previous permission having been obtained from the superintendent. They were driven over the Rogue River and Fort Klamath wagon road, and the owner and drovers fully complied with the terms of their permit and all of the rules and regulations of the park.

During the season of 1911 there was but one herd of loose cattle driven over the road through the park, which was done by J. E. Pelton & Co. In May the cattle were taken to their destination, 10 miles south of the reserve, in Wood River Valley.

## FOREST FIRES.

The season of 1910 was an unusually dry one, and forest fires were more prevalent and harder to handle and control. There were a number of small fires in the reserve, some being started by lightning, and there was continual danger from fires originating outside the park. All the fires were extinguished before any considerable amount of damage had been done.

## ROADS AND TRAILS.

There are three wagon roads in the park—one leading from the south line of the reserve to the superintendent's headquarters, a distance of 8 miles; one from the west line of the park to the same place, a distance of 6¼ miles; and one from the headquarters to the lake, a distance of 5 miles.

The two roads first mentioned were built 46 years ago by the Government troops at Fort Klamath for the purpose of hauling supplies for use at the post. They are simply tracks little wider than a wagon, cut out through the trees and bushes. By constant use these narrow roads have become veritable gutters the width of a wagon and 1 or 2 feet deep, and it is very difficult for teams to pass. These roads have been kept in the best condition possible with the meager sum which has been available for improvement work in the park. At some points these roads have been widened so that teams can pass, but generally the trees, logs, and bushes are too close to the road to permit a team to turn out of the narrow track. These roads also become very dusty in summer, so much so that it is very disagreeable to travel over them the greater portion of the season.

The dust could easily be overcome by the use of road sprinklers. There is an abundant supply of water with good fall suitably distributed along the roads, so that tanks could be filled by gravity. More real benefit could be derived from the small outlay of money that would be necessary to install this improvement than in any other manner with the same amount of expense.

I can not too strongly urge that a sprinkling system be installed and continued through the dry season of 1912. Three good sprinklers should be purchased and tanks erected at suitable places. If these roads were sprinkled they would need little other improvement, as they would incline to fill up and become more level instead of being cut deeper and deeper by the wheels of the vehicles passing over them. These sprinklers could then be used upon the better roads in the park when they shall have been constructed.

In August, 1910, under the supervision of Maj. J. J. Morrow, Corps of Engineers, United States Army, there was begun the location and survey of a comprehensive system of roads. This work was completed in August, 1911.

These contemplated roads consist of one from the south line of the park to the headquarters in the reserve, a distance of 8 miles; one from the west line to the same place, a distance of 6½ miles; and one from the headquarters to Crater Lake, a distance of 5 miles.

On the east side of the lake the engineers also located and surveyed a road from the east line of the park to the rim of the lake south of Mount Scott, a distance of about 9 miles. This survey follows the south side of Sand Creek and Wheeler Creek by way of the pinnacles, one of the most beautiful and interesting localities in the reserve. A road was located from the east line of the park north of Mount Scott by the way of Cascade Springs to the summit or rim of the crater.

This point on the rim is the place where the Crater Lake Co. contemplates building a fine hotel for the accommodation of tourists.

There was also located and surveyed a proposed road completely encircling the lake. For most of the distance this road will be immediately upon the rim of the crater, and when it shall have been completed it will be beyond question one of the grandest scenic roads in the world.

Upon this road one will be from 1,000 to 2,000 feet above the lake and at an elevation of from 7,000 to 8,000 feet above sea-level. It would afford an unobstructed view of the surrounding country to the north, the east, the south, and the west as far as the eye can reach. This road when completed will be about 35 miles long.

The roads from the south and the west should be built first, and all these roads should be constructed as fast as there are funds available. There should be appropriated by the next Congress $40,000 for the construction of these two roads to the lake from the south and the west, and $100,000 for the first section of the road around the lake. Additional appropriations should be made until the work is completed. The horse trails to Sun Creek and Mount Scott, to Union Peak, and to Bybee Creek should all be cut out, widened, and otherwise improved; for this purpose there should be an appropriation of $1,500 immediately available.

## BRIDGES.

Upon the roads now existing in the park there are six bridges ranging in length from 60 to over 100 feet. These bridges are constructed wholly of wood, have been used a number of years, were not painted, and will soon have to be replaced with new structures.

During the season of 1912 these bridges should be replaced with such new structures having steel arches and concrete abutments. For this purpose there should be an appropriation of $11,500.

## BUILDINGS AND FENCES.

The buildings and fences in the reserve will require considerable repair and improvement, including painting. The fences in the park should be so constructed that they could be laid over on the side in the fall to prevent them from being broken down by the snow. For repairs and improvements upon buildings and fences there should be an appropriation of $900.

## WATER POWER AND ELECTRIC PLANT.

In order to increase the power which operates the hydraulic ram for raising water to the superintendent's office and residence and the grounds adjacent, there should be a dam erected just below the large spring at the head of Anna Creek. There should also be installed at this point a small electric plant with necessary equipment to furnish light for the buildings and grounds at the headquarters in the park. For the dam and the electric plant there should be appropriated $1,100.

## PARK RANGERS, RANGER STATIONS, AND TELEPHONE LINES.

The number of rangers is too small to maintain a good and strong administration of its affairs or to properly protect the game from poachers. To prevent the timber of the reserve from being consumed by forest fires requires constant vigilance, and there should be a force able to cope with a fire when one breaks out.

There is at present but one temporary park ranger on duty from July 1 to September 30, whereas there should be one permanent park ranger on duty the year round and five temporary rangers on duty from July 1 to September 30. Five ranger stations should be built, and all these should be connected with each other and with the superintendent's headquarters by good telephone lines. Five ranger cabins with necessary equipments would probably cost at least $400 each, and the necessary telephone lines would cost $1,200.

## PATENTED LANDS.

There are approximately 1,200 acres of patented lands lying in the southeast corner of the park the title to which should be acquired by the Government. These lands are mainly timbered and are presumably being held for speculation or for the purpose of manufacturing the timber into lumber.

Timber lands are becoming more scarce and consequently more valuable each year, and it is only reasonable to suppose that the time is short when some milling company will acquire control of these lands and that that section in the park will be completely denuded of its fine and highly valuable timber.

I think it would be greatly to the interests of the Government to purchase all private claims within the reserve and thus extinguish them, and I can not too strongly again urge that the necessary action be taken by the Government for the acquisition of the title to all these patented lands in the park.

## EXTENSION OF THE PARK LINES.

In order to protect the game, the boundary of the park ought to be changed to include the wintering grounds of the deer. By this means they will have the same protection in the winter as in the summer, when they stay in the mountains included within the park.

As has been said, a national park should not be made a game preserve to set up standing, living targets on its borders; nor should it be used to tame the deer, so they will become the easy prey of the deer skinner when the deep snow compels them to go outside the lines of the park in order to live through the winter.

I know there are numbers of hunters camped in the mountains west of the park for the express purpose of intercepting and killing the deer while on their journey from the higher lands of the park to their wintering grounds.

I recommend that the following tract immediately north and northwest of the park be included within its limits: Beginning at the northeast corner of the park and thence running north along the meridian 122° west longitude to the north line of township 27 south, thence west to the northwest corner of township 27 south, range 3 east, thence south to the parallel 43° 4′ north latitude, thence east along the parallel 43° 4′ to the place of beginning.

The area embraced within the proposed extended lines lies wholly or almost wholly in the Crater National Forest, and so far as known by the superintendent there are no settlers or private holdings within its boundaries.

## OBSERVANCE OF RULES AND REGULATIONS.

It is pleasing to note that there was apparently very little or no disposition shown to violate intentionally any of the rules and regulations of the park; and during the season of 1910 there were no arrests made and no trials of offenders.

During the last season all guns were taken at the superintendent's office, checked, and returned upon presentation of the coupon when the visitor was ready to depart from the park.

As a matter of safety and a prevention of violation of the rules and regulations of the reserve this mode was not objectionable, but was laborious and somewhat inconvenient to both the management of the park and the public. Under this method there are usually from 20 to 50 guns in the office all the time. I made requisition to the department for gun seals, such as are used in the Yellowstone Park, with instructions regarding their use.

There have been no trials of offenders during the season of 1911, but it was found to be necessary to arrest one man for disorderly conduct, who was ejected from the park with the admonition not to return without permission from the Secretary of the Interior or the superintendent of the park.

## ACCIDENTS.

As a result of the caution exercised in regard to the quality, condition, and the management of all automobiles and other conveyances used upon the roads, and all launches and other boats upon the lake, there have been no accidents during the regular seasons of 1910 and 1911. The only accident of any kind occurred in January, 1911 when B. B. Bakowski, a photographer, lost his life by coming into these mountains alone when the snow was from 12 to 15 feet deep and the temperature below zero.

On January 22, 1911, Mr. Bakowski entered the park on snowshoes and established a camp near the lake for the purpose of taking photographs. As he had not returned to the valley by the latter part of February a searching party started to look for him. This party remained in the park several days and made as thorough a search for the missing man as was possible, but no trace of him could be found. A number of parties have been organized during the summer and every possible effort has been made to find his remains, but found no trace of him, and the manner in which he lost his life is still unexplained.

I recommend that the park be closed against any and all kinds of travel between December 1 and June 1 of each year, except by written permission from the superintendent. This rule should be made in order to prevent reckless or careless people or persons not acquainted with the conditions in these high mountains from hazarding and probably losing their lives. If persons desiring to enter the park in winter were required to make application to the superintendent, there would be opportunity to ascertain where the party or parties were endangering their lives or whether they were properly equipped and capable of taking care of themselves.

## FISH.

There are no fish in any of the waters of the park except Crater Lake and lower Anna Creek below the falls. Crater Lake is well stocked with rainbow trout; those caught are usually from 14 to 20 inches in length, and some have been caught 24 or 26 inches long and weighing 6 or 7 pounds. A year ago 50,000 fry of the rainbow trout were planted in Crater Lake, and this summer a great many small fish could be seen at any time.

There are a few Dolly Varden trout in lower Anna Creek. Upper Anna Creek and its tributaries and Sand Creek, Wheeler Creek, and Castle Creek should all be stocked with mountain trout or eastern brook trout.

Fishing, with hook and line only, is allowed in Crater Lake from July 1 to September 30, the catch of each fisherman being limited to five in any one day. Fishing in all other waters of the reserve is allowed under the regulations prescribed by the State laws.

## GAME.

There is not a great variety of game animals or birds in the park. Black and brown bears, some smaller fur-bearing animals, such as the pine marten, the fisher, and several varieties of squirrels comprise the principal valuable game animals. There are a good many blacktail deer in the reserve in the summer, but they, as well as the birds, are compelled to migrate to a lower and warmer climate during the winter season.

The ringtail grouse and the native or timber pheasant are the principal game birds of the park. There are some other birds here, however, such as the blue jays, camp robbers, robins, orioles, etc.

As soon as it is deemed practicable, probably next summer, a feeding ground for the bears will be established. It is believed that by feeding and protecting them they will soon become tamer and more numerous.

## PREDATORY ANIMALS.

Predatory animals in the park include panthers or cougars, bobcats, timber wolves, and coyotes. All four of these species of animals are very destructive to the deer. When the deer are driven to the lower altitudes by the fall or winter storms these animals follow, so they may prey upon them during the winter. I would favor taking steps to kill out and exterminate, if possible, these harmful animals.

## ESTIMATES FOR FISCAL YEAR 1913.

I submit the following estimates for necessary protection and improvement and the proper administration of the affairs of the park, fiscal year ending June 30, 1913:

| | |
|---|---|
| For the purchase of three road sprinklers | $1,800 |
| For the erection of 15 water tanks, at $150 | 2,250 |
| For the construction of two roads from the south line and west line of the reserve to the lake | 40,000 |
| For the first section of the road around the lake | 100,000 |
| For the improvement of trails to more important points in the park | 1,500 |
| For the construction of bridges | 11,500 |
| For improvement of buildings and fences | 900 |
| For dam and electric plant | 1,100 |
| For one permanent park ranger, at $75 a month | 900 |
| For five temporary park rangers | 1,125 |
| For five ranger cabins, at $400 each | 2,000 |
| For telephone lines in the park | 1,200 |
| For labor | 3,000 |
| For salary of superintendent | 1,000 |
| For allowance to superintendent | 365 |
| For incidental and contingent expenses | 500 |

Very respectfully,

W. F. Arant,
*Superintendent.*

The Secretary of the Interior.

# RULES AND REGULATIONS.

## GENERAL REGULATIONS OF JUNE 10, 1908.

By act of Congress approved May 22, 1902, the tract of land bounded north by the parallel forty-three degrees four minutes north latitude, south by forty-two degrees forty-eight minutes north latitude, east by the meridian one hundred and twenty-two degrees west longitude, and west by the meridian one hundred and twenty-two degrees sixteen minutes west longitude, having an area of 249 square miles, in the State of Oregon, and including Crater Lake, has been reserved and withdrawn from settlement, occupancy, or sale under the laws of the United States, and dedicated and set apart forever as a public park or pleasure ground for the benefit of the people of the United States, to be known as "CRATER LAKE NATIONAL PARK."

The park by said act is placed under the exclusive control of the Secretary of the Interior, and these rules and regulations are made and published in pursuance of the duty imposed on him in regard thereto.

1. It is forbidden to injure or destroy in any manner any of the natural curiosities or wonders within the park or to disturb the mineral deposits in the reservation, except under the conditions prescribed in paragraph 11 of these regulations.

2. It is forbidden to cut or injure any timber growing on the park lands, except for use in the construction of places of entertainment and in connection with the working of located mining claims or to deface or injure any Government property. Camping parties and others on the reservation will be allowed to use dead or fallen timber for fuel, in the discretion of the superintendent.

3. Fires should be lighted only when necessary and completely extinguished when not longer required. The utmost care must be exercised at all times to avoid setting fire to the timber and grass.

4. Hunting or killing, wounding or capturing any bird or wild animal on the park lands, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed on the park lands under other circumstances than prescribed above, will be taken up by the superintendent and held subject to the order of the Secretary of the Interior, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof.

5. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for purposes of merchandise or profit is forbidden. Fishing

may be prohibited by order of the superintendent in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

6. No person will be permitted to reside permanently, engage in any business, or erect buildings, etc., upon the Government lands in the park without permission, in writing, from the Secretary of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion. No pack trains will be allowed in the park unless in charge of a duly registered guide.

7. Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; such lands, however, shall have the metes and bounds thereof so marked and defined that they may be readily distinguished from the park lands. Stock may be taken over the park lands to patented lands with the written permission and under the supervision of the superintendent.

8. The herding or grazing of loose stock or cattle of any kind on the Government lands in the park, as well as the driving of such stock or cattle over the same, is strictly forbidden, except in such cases where authority therefor is granted by the superintendent.

9. No drinking saloon or barroom will be permitted upon Government lands in the park.

10. Private notices or advertisements shall not be posted or displayed on the Government lands within the reservation, except such as may be necessary for the convenience and guidance of the public.

11. The act provides that, under such regulations as the Secretary of the Interior may prescribe, the reservation shall be open "to the location of mining claims and the working of the same." It was not the purpose of this provision to extend the mining laws to the park without limitation, but only to authorize the location and working of mining claims thereon, under regulations to be prescribed by the Secretary of the Interior, and in such manner as not to interfere with or prejudicially affect the general purpose for which the reservation was established. It is therefore prescribed:

(*a*) That persons desiring to locate mining claims within the park shall enroll their names and addresses with the superintendent of the reservation, and shall file with such superintendent a description, in writing, of the land desired to be located. They shall also file with the superintendent evidence that they are severally qualified to make locations under the mining laws, and before entering upon the park for such purpose they must obtain from the Secretary of the Interior, through the superintendent, a written permit to do so. Such permit will be issued only upon condition that the applicant or applicants therefor, while upon the reservation, will not destroy or damage any game, fish, timber, or natural objects therein, and will strictly observe and comply with the requirements of the law and these regulations.

(*b*) Lands in the park upon which valuable deposits of mineral shall have been or may be found may be located under the mining laws by any person or persons duly qualified and holding a permit such as is described in the preceding paragraph, and such person or persons, his or their successor or successors in interest, may work the claim or claims so located; but in carrying on the work he or they shall in all respects observe and comply with the provisions of the statute creating the park and with these regulations: *Provided*, That such person or persons may, as the proper working of such mining claim or claims shall require, be permitted to use, for mining purposes, such timber or stone found upon the land located as in the judgment of the superintendent may be so used without injury or damage to the reservation "as a public park or pleasure ground": *And provided further*, That within thirty days after the location of any mining claim within the park, and before development work thereon shall be commenced, a copy of the notice of location shall be filed with the superintendent, together with proof satisfactorily showing that discovery of a valuable mineral deposit has been made within the limits of the location, and, if it be a placer location, that every 10-acre tract embraced therein has been found to contain valuable deposits of mineral.

(*c*) The statute does not authorize the purchase of or the acquisition of the legal title to lands located as mining claims within the park. The rights of the locator or locators, therefore, will be at all times subject to forfeiture upon breach of any of the conditions mentioned in the permit herein provided for, or upon refusal or failure to comply with any of the provisions of the statute or of these regulations.

(*d*) Upon breach of any such conditions, or upon refusal or failure to comply in all respects with the provisions of the statute and of these regulations, or where locators of mining claims do not appear to be acting in good faith, or who, after location, do not work their claims in such manner as to show good faith in the assertion thereof, the superintendent will revoke their permits, forthwith remove them from the park, and report the facts to the Secretary of the Interior.

12. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the park and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

No lessee or licensee shall retain in his employ any person whose presence in the park shall be deemed and declared by the superintendent to be subversive of the good order and management of the reservation.

13. Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor and, upon conviction, be fined not more than $500 or imprisoned not more than one year, and shall be liable for any loss sustained by the United States as a result of such violation, as provided by the act creating the park.

14. The superintendent designated by the Secretary is hereby authorized and directed to remove all trespassers from the Government lands in the park and enforce these rules and regulations and all the provisions of the act of Congress aforesaid.

## REGULATIONS OF JUNE 10, 1908, GOVERNING THE IMPOUNDING AND DISPOSITION OF LOOSE LIVE STOCK.

Horses, cattle, or other domestic live stock running at large or being herded or grazed in the Crater Lake National Park without authority from the Secretary of the Interior will be taken up and impounded by the superintendent, who will at once give notice thereof to the owner, if known. If the owner is not known, notice of such impounding, giving a description of the animal or animals, with the brands thereon, will be posted in six public places inside the park and in two public places outside the park. Any owner of an animal thus impounded may, at any time before the sale thereof, reclaim the same upon proving ownership and paying the cost of notice and all expenses incident to the taking up and detention of such animal, including the cost of feeding and caring for the same. If any animal thus impounded shall not be reclaimed within thirty days from notice to the owner or from the date of posting notices, it shall be sold at public auction at such time and place as may be fixed by the superintendent after ten days' notice, to be given by posting notices in six public places in the park and two public places outside the park, and by mailing to the owner, if known, a copy thereof.

All money received from the sale of such animals and remaining after the payment of all expenses incident to the taking up, impounding, and selling thereof shall be carefully retained by the superintendent in a separate fund for a period of six months, during which time the net proceeds from the sale of any animal may be claimed by and paid to the owner upon the presentation of satisfactory proof of ownership, and if not so claimed within six months from the date of sale such proceeds shall be turned into the Crater Lake National Park fund.

The superintendent shall keep a record in which shall be set down a description of all animals impounded, giving the brands found on them, the date and locality of the taking up, the date of all notices and manner in which they were given, the date of sale, the name and address of the purchaser, the amount for which each animal was sold and the cost incurred in connection therewith, and the disposition of the proceeds.

The superintendent will, in each instance, make every reasonable effort to ascertain the owner of animals impounded and to give actual notice thereof to such owner.

*Application for permission to drive stock through the Crater Lake National Park, Oreg.*

——— ——— ———, 19—.

The Superintendent of the Crater Lake National Park.

Sir: I, ——— ———, a citizen of the United States and a resident of ———, county of ———, State of ———, hereby make application for permission to drive ——— head of loose stock or cattle over the main traveled wagon road leading through the Crater Lake National Park, Oreg., en route from ——— to ———; I hereby agree that I will cross the park boundary with my stock on the —— day of ———, 19—, and will not occupy more than ——— days in crossing the reservation; that I will cause the stock to be moved expeditiously over the road through the park, and will not allow the same to scatter, stop, graze, or pasture upon any of the places used or occupied by the public.

I further agree to observe and obey all the rules and regulations for the government of the Crater Lake National Park.

——— ———.

Approved and permit granted ———, 19—.

——— ———,
*Superintendent.*

## PENALTY FOR DEPREDATIONS ON PUBLIC LANDS AND FOR NOT EXTINGUISHING FIRES ON PUBLIC LANDS.

[Excerpt from an act entitled "An act to provide for determining the heirs of deceased Indians, for the disposition and sale of allotments of deceased Indians, for the leasing of allotments, and for other purposes," approved June 25, 1910 (36 Stat., 857), providing punishment for depredations and for nonextinguishment of fires on public lands, etc.]

SEC. 6. That section fifty of the act entitled "An act to codify, revise, and amend the penal laws of the United States," approved March fourth, nineteen hundred and nine (Thirty-fifth United States Statutes at Large, page one thousand and ninety-eight), is hereby amended so as to read:

"SEC. 50. Whoever shall unlawfully cut, or aid in unlawfully cutting, or shall wantonly injure or destroy, or procure to be wantonly injured or destroyed, any tree growing, standing, or being upon any land of the United States which, in pursuance of law, has been reserved or purchased by the United States for any public use, or upon any Indian reservation, or lands, belonging to or occupied by any tribe of Indians under the authority of the United States, or any Indian allotment while the title to the same shall be held in trust by the Government, or while the same shall remain inalienable by the allottee without the consent of the United States, shall be fined not more than five hundred dollars, or imprisoned not more than one year, or both."

That section fifty-three of said act is hereby amended so as to read:

"SEC. 53. Whoever shall build a fire in or near any forest, timber, or other inflammable material upon the public domain, or upon any Indian reservation, or lands belonging to or occupied by any tribe of Indians under the authority of the United States, or upon any Indian allotment while the title to the same shall be held in trust by the Government, or while the same shall remain inalienable by the allottee without the consent of the United States, shall, before leaving said fire, totally extinguish the same; and whoever shall fail to do so shall be fined not more than one thousand dollars, or imprisoned not more than one year, or both."

## REGULATIONS OF NOVEMBER 15, 1910, GOVERNING THE ADMISSION OF AUTOMOBILES DURING THE SEASON OF 1911.

Pursuant to authority conferred by the act of May 22, 1902 (32 Stats., 202), setting aside certain lands in the State of Oregon as a public park, the following regulations governing the admission of automobiles into the Crater Lake National Park during the season of 1911 are hereby established and made public:

1. No automobile will be permitted within the metes and bounds of the Crater Lake National Park unless the owner thereof secures a written permit from the superintendent or his representative.

2. Applications for permits must show: (*a*) Name of owner, (*b*) number of machine, (*c*) name of driver, and (*d*) inclusive dates for which permit is desired, not exceeding one year, and be accompanied by a fee of $1 for a single round trip through the park or a fee of $5 per annum for each machine for personal use and not for hire.

Permits must be presented to the superintendent or his authorized representative at the rangers' headquarters on the Government roads.

Permittees will not be allowed to do a commercial transportation business in the park without a special license therefor from the Secretary of the Interior. All permits granted at any time when automobiles can enter the park will expire on December 31 of the year of issue.

3. The use of automobiles will be permitted on the Government roads from the southern and western boundaries of the park between the hours of 6.30 a. m. and 10.30 a. m., and between the hours of 3.30 p. m. and 6.30 p. m.

4. When teams approach, automobiles will take position on the outer edge of roadway, regardless of the direction in which they are going, taking care that sufficient room is left on the inside for the passage of teams.

5. Automobiles will stop when teams approach and remain at rest until teams have passed or until teamsters are satisfied regarding the safety of their teams.

6. Speed will be limited to 6 miles per hour, except on straight stretches where approaching teams will be visible, when, if no teams are in sight, this speed may be increased to the rate indicated on signboards along the road; in no event, however, shall it exceed 15 miles per hour.

7. Signal with horn will be given at or near every bend to announce to drivers of approaching teams the proximity of an automobile.

8. Teams have the right of way, and automobiles will be backed or otherwise handled, as necessary, so as to enable teams to pass with safety.

9. Violation of any of the foregoing rules or the general regulations for the government of the park will cause revocation of permit, will subject the owner of the automobile to any damages occasioned thereby and to ejectment from the reservation, and be cause for refusal to issue a new permit to the owner without prior sanction in writing from the Secretary of the Interior.

10. All persons passing through the park with automobiles are required to stop at the superintendent's headquarters or the rangers' headquarters and register their names.

11. These rules are also applicable to motor cycles, which may use the park roads on payment of a fee of $1 for each machine per annum; permits issued therefor shall expire on December 31 of the year of issue.

# REPORT OF THE SUPERINTENDENT OF THE GLACIER NATIONAL PARK.

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GLACIER NATIONAL PARK,
OFFICE OF SUPERINTENDENT,
*Belton, Mont., October 15, 1911.*

SIR: I have the honor to make the following report on the condition of affairs and the management of the Glacier National Park:

## GENERAL STATEMENT.

Glacier National Park, created by the act of Congress approved May 11, 1910 (36 Stat., 354), is located in northwestern Montana and embraces over 1,400 square miles of the Rocky Mountains, extending north from the main line of the Great Northern Railway to the Canadian border. The eastern boundary is the Blackfeet Indian Reservation and the western boundary is the Flathead River. The park has an area of approximately 915,000 acres, its length averaging 60 miles and its width 50 miles. Within its borders are attractions for the scientist and tourist unsurpassed in any country in the world, tourists of world-wide experience pronouncing it the Switzerland of America. Within its confines are 60 active glaciers, these ice sheets being the sources of beautiful cascades and roaring mountain streams flowing into countless clear, placid lakes for which the park is famed, the most noted of these being Lake McDonald, Lake St. Marys, Lake Louise, Iceberg Lake, Red Eagle Lake, Kintla Lake, Bowman Lake, Kootenai Lake, Logging Lake, Quartz Lake, Harrison Lake, and Two Medicine Lake. Lake McDonald, situated 2½ miles from Belton, a little town on the main line of the Great Northern Railway, is one of the most beautiful lakes in America. It is 3,154 feet above sea level, 12 miles long, 2 miles wide, and surrounded by mountains covered with virgin forests of western larch, cedar, white pine, Douglas fir, spruce, and hemlock. The air about Lake McDonald is remarkably clear and pure, the fragrance of the fir, pine, and cedar producing a refreshing and invigorating atmosphere.

Iceberg Lake is a small sheet of water about 16 miles north of Lake McDonald. It is so named because of the great floes which are to be seen on its surface in midsummer.

The St. Marys Lakes are located on the eastern side of the park, northwest of Midvale. These lakes are long and ribbonlike, one side being heavily forested, while on the other side the mountains rise sheer from the water's edge. Upper St. Marys Lake is 11 miles and the Lower St. Marys Lake 7 miles in length. Equally as much can be said in regard to the beautiful scenery surrounding all the other lakes.

Avalanche Basin, a remarkable U-shaped valley 8 miles from Lake McDonald, is one of the most attractive and impressing features of the park. Nestling in the valley below the basin lies Avalanche Lake, into which dash cascades and cataracts that head in the melting snow and ice above and leap thousands of feet to the lake beneath.

The principal glaciers in the park are Blackfoot, Grinnell, Harrison, Pumpelly, Red Eagle, Sperry, and Chaney, which range in area from a few hundred yards to several miles in extent.

From the summit of Red Eagle Mountain one of the grandest views of mountain scenery in America is obtainable, this spot being a favorite with artists who visit the park.

The park abounds in all varieties of game that are indigenous to this section of the country, such as bear, elk, moose, deer, mountain sheep, mountain goat, mountain lion, as well as the smaller wild animals of the forest.

Fishing in the park is especially good and quite an attraction to all who visit it. Practically all the streams and lakes abound in many species of gamy trout.

## ROUTES AND ACCOMMODATIONS.

Glacier National Park is easily accessible via the Great Northern Railway, at present it being the only line which touches its borders. One entrance to the park is from Midvale, Mont., which is the gateway to that portion of the park on the east side of the mountains. A line of permanent camps has been established by W. J. Hilligoss, the distance between the camps being as follows: Midvale to Two Medicine, 14 miles; Two Medicine to Cut Bank, 16 miles; Cut Bank to St. Marys, 22 miles; St. Marys to Gunsight, 15 miles; Gunsight to Sperry Glacier, 12 miles. Lake McDonald is 7 miles distant from Sperry Glacier. It is the intention of Mr. Hilligoss to construct wooden structures, patterned after the Swiss style of architecture, to replace the tents which were in use this year. The Great Northern Railway is contemplating constructing an automobile road from Midvale to St. Marys, by which means the tourist can reach the foot of the mountains a few hours after getting off the train at Midvale.

The western portion of the park is accessible via Belton, Mont., 1,177 miles west of St. Paul, on the Great Northern Railway. A number of chalets have been erected at this place and accomodations are afforded tourists at the rate of $2.50 per day. During the past season the bulk of the travel came in this way. From Belton to Lake McDonald the new Government road, 60 feet in width and 2½ miles in length, runs through a dense forest to the foot of Lake McDonald. Stages make three round trips each day, connecting with boat service to the head of the lake, where good hotel accommodations can be secured at from $2.50 to $3 per day.

Trails have been cut from Lake McDonald to many interesting points on the west side of the mountains. Trips to such places of interest as Sperry Glacier, Avalanche Basin, and McDonald Falls can be made in one day. More extended trips, requiring from two days to one or two weeks, can be made to more distant portions of the park, taking in such features as Granite Park, Iceberg Lake, Swift Current Pass, Chaney Glacier, Mount Cleveland, Waterton Lakes, and many other interesting points.

Guides, saddle horses, pack outfits, etc., can be secured at Lake McDonald.

## ADMINISTRATION OF THE PARK IN 1910.

Shortly before I reached the park and assumed charge as superintendent of road and trail construction forest fires broke out in various portions of the reservation, and immediately upon my arrival, August 8, 1910, I devoted my attention to fire fighting. The forest fires were the worst we have had in the West for years and my entire time was taken up in checking them.

The following extract from a report made on September 14, 1910, shows the extent of the fires:

Kintla Lake Fire: Ford Creek to Canadian boundary and from Flathead River to Rocky Mountains, mostly burned over.

Extent: 23,000 acres.

Duration: July 17 to August 21; still burning, but boundary not extended since August 21 or 22.

Cause: Fire crossed Flathead River from fire started on Trail Creek by lightning about July 14.

Estimate: Very little heavy timber burned, but a great deal of lodge-pole reproduction.

Value of timber destroyed: No commercial value could be set, owing to its remoteness from sawmills, lack of transportation facilities, and the fact that the timber was of recent reproduction.

Bowman Creek Fire: Fire originated 2 miles below foot of Bowman Lake; burned down creek 1 mile and to top of ridge on both sides and back to main range of Rocky Mountains on both sides of lake along ridges, but not down to lake shore, except along the southwest shore.

Extent: 8,000 acres.

Duration: August 20 to present time; still burning, but under control.

Cause: Probably started by campers.

Estimate: Area burned over was covered with lodge-pole reproduction.

Value of timber destroyed: Unable to give money value; scenic value considerable

Quartz Lake Fire: Near head of Quartz Lake.

Extent: 10 acres.

Duration: August 20 to September 4.

Cause: Unknown.

No estimate.

Logging Creek Fire: Secs. 8, 9, and 16, T. 34 N., R. 21 W., M. M.

Extent: 200 acres.

Duration: Started about July 12; reported July 19. Forty men had fire under control July 23. Force reduced to three men July 25; force reduced to one man August 7, guard removed September 2. Fire still burning, but safe.

Cause: Unknown. Supposed to be from lightning or from Whitefish fire.

Area: In heavy timber, 1 mile from road between Logging and Quartz Creeks.

Estimate: Several million feet of matured timber were lost in this fire. Would have a money value of $3.50 to $4 per thousand stumpage, as this timber could be driven down Flathead River to mills at Columbia Falls.

Anaconda, Dutch, and Camas Creeks fires: From mouth of Logging Creek diagonally across to a point 1 mile from Anaconda Creek, 4 miles from road; thence along bench up North Fork of Anaconda to top of ridge 1 mile from head of Logging Lake; thence an irregular line along foot of mountains to ridge between two main branches of Dutch Creek; thence to mouth of Dutch across Camas Creek.

Extent: 19,000 acres.

Duration: August 20 to present date, but under absolute control from September 4; now being patrolled only.

Cause: Probably caused from the Whitefish fire.

**Estimate:** 75,000,000 feet; money value of loss considerable; scenic value even more so.

**Rock Hill Fire:** Between Little St. Marys and Harrison Lakes, 6 to 8 miles north of Great Northern Railway.

**Extent:** 600 acres.

**Duration:** August 12 to September 8.

**Cause:** Unknown.

**Estimated loss:** 3,000,000 feet of matured timber, probably worth $2 per thousand stumpage.

**Garry Fire:** Northwest of Great Northern Railway about 5 miles.

**Extent:** Length of trench on fire line, 12 miles; length of trench swept over by fire, 5 miles.

**Duration:** 18 days.

**Cause:** Unknown.

**Area:** 7,600 acres, estimated; total number of men employed, 42; average length of time for each man, 17½ days; average number of hours per day for each man, 13.

**Quantity and value of timber:** It is hard to estimate this loss owing to the fact that this timber was in a very mountainous region, removed from either road or water transportation. Its scenic value did not amount to much, as it is off the line of travel for tourists.

**Essex Fire:** From Middle Fork of Flathead River at Essex on Great Northern, up Ole Creek about 14 miles; about 6 miles up Park Creek; about 8 miles up Coal Creek.

**Extent:** About six townships.

**Cause:** Fire jumped from south side of Great Northern track and Middle Fork of Flathead River from Blackfeet National Forest. Was reported at once to the forest ranger on the Blackfeet Forest at Essex, who remarked it was out of his jurisdiction. It was several days before any effort was made to put the fire out. By that time the fire had spread so that it was almost impossible to do anything with it, or at least it took a large force of men and almost a month's work before it was gotten under control.

**Estimate:** On Ole Creek, 15,000,000 feet; on Park Creek, 54,000,000 feet; on Coal Creek, 20,000,000 feet.

**Fielding fire:** Have no data on this fire, as it was principally handled by railroad employees.

**Midvale Fire:** Followed Great Northern right of way from Summit to creek near Midvale; followed creek 3 miles north toward Two Medicine Creek; thence northwest 2 miles to the mountains.

**Extent:** 8 miles square, estimated.

**Cause:** From fire at Fielding across the divide.

**Value destroyed:** About 8,000,000 feet of good timber, $3 per thousand stumpage; balance in old fire burns and late reproduction; principal loss to the park was its scenic value.

Upon the cessation of the fires in 1910, I turned my attention to trail work, but the season was practically over and camp was broken September 26.

## ADMINISTRATION OF THE PARK IN 1911.

Administration headquarters this year were temporarily located at the foot of Lake McDonald, the department authorizing the renting of six log cabins, which were turned into headquarters. Active operations for the season of 1911 began on April 28. As the proposed Government road between Belton and Lake McDonald ran through patented areas, deeds from the several owners were secured for a right of way 60 feet wide and 2 miles 610 feet long. Much difficulty was encountered in its building by reason of the fact that the route ran through a dense forest, in some places swampy ground being encountered. On September 30 the road was practically completed, at a cost of $7,634.89 per mile, making a total cost of $17,178.50. This amount includes the cost of plows, scrapers, tools, etc., and is a saving of $797.70 over the engineer's estimate of $17,976.20.

The following shows the amount of trail work done in the park this year:

*Trail work, season of 1911.*

| | Miles. |
|---|---|
| Old trail cleaned out from foot to head of Lake McDonald | 11 |
| New trail, foot to head of Lake McDonald | 1 |
| McGee's meadow trail, partly reconstructed | 4½ |
| New trail constructed from ranger cabin at head of Lake McDonald to McDonald Falls | 2 |
| Cleaned out trail from head of Lake McDonald to Avalanche Basin | 7½ |
| Cleaned out trail from head of lake to Sperry Glacier | 6 |
| Cleaned out trail from head of lake to Kootenai Lake | 34 |
| Cleaned out part of Bowman Lake trail (Browns Pass) | 20 |
| Built new trail in Bowman Lake country | 6 |
| Cleaned out old trail from Boundary Line up Boundary Creek | 8 |
| Built new trail, Belton Hills | 15 |
| Built Red Eagle trail | 20 |
| Cleaned out Gunsight trail (partly rebuilt) | 20 |
| Built new trail up Park Creek | 5 |
| Cleaned out old trail up Park Creek | 7 |
| Cleaned out Swift Current trail | 10 |
| Cleaned out Red Eagle trail | 10 |
| New trail, Belly River country, approximately | 10 or 12 |

There are now 199 miles of trails which have been put in fair condition, at a total cost of $3,321.50.

The telephone lines built this season and in active operation are as follows:

| | Miles. |
|---|---|
| Belton Station to the temporary administration headquarters at the foot of Lake McDonald | 2½ |
| Administration headquarters to ranger station at head of Lake McDonald | 12 |
| Administration headquarters to Logging Creek station | 22 |
| Head of Lake McDonald to Sperry Glacier | 6 |

A total of 42½ miles was installed at a cost of $1,400.37, including nine telephones. Telephones were installed in the residence of J. M. Gruber, and in the store of W. L. Adair, a rental fee of $4 per month during the time that the phones are in use being exacted therefor.

Two docks were built on Lake McDonald for the use of the public and the licensed passenger boats, at a cost of $528.42.

## NUMBER OF VISITORS.

Between June 1, 1911, and October 1, 1911, there were 4,000 visitors in the park. The majority entered the park by way of Belton and registered at the superintendent's office at the foot of Lake McDonald. Midvale stands next in the number of persons visiting the park, and a few entered from the north. Considering that this is the first year of the park, this number far exceeded expectations.

## ADMINISTRATION HEADQUARTERS.

A site for administration buildings has been selected at Fish Creek, a point on the western shore of Lake McDonald, about 2 miles from its foot. This point will be connected by road with the recently completed macadamized road between Belton and Lake McDonald. Plans were drawn for the buildings, and bids solicited, but as the department regarded the bids as excessive they were rejected, and the matter has been dropped for the present season.

## INSTALLATION OF SAWMILL.

An order has been placed for a sawmill and shingle machine, with all appurtenances, for the purpose of sawing all dead and down and infested timber into lumber and shingles. In many places the cutting of fully matured timber will not in the least mar the beauty of the park, but will benefit the growing timber. In the past it has been the custom of the department to set aside a certain amount of money each year for the purpose of killing off insects infesting timber. This work was done by the Bureau of Entomology of the Department of Agriculture. A great many merchantable infested trees were cut down and left to rot on the ground, the Government not deriving a cent of revenue from the timber. At the present time, it is my plan to temporarily install the sawmill at Fish Creek, the proposed administrative site. Near this point there is a large amount of matured, dead, and infested timber that can be cut out without injuring other timber or marring any of the beauty of the park. It is proposed to saw out all lumber (outside of finish material) and shingles needed for the administration buildings, having it right on the grounds, thereby effecting a saving in the way of hauling. Numerous inquiries for lumber have been received, and in a short time it is believed lumber will rank first among the sources of revenue.

## CONCESSIONS.

A concession for a stage line between Belton and Lake McDonald was granted to John Weightman, an experienced liveryman of Kalispell, Mont. During the season he ran five stages between the above-named points, making three round trips each day.

A concession for a boat line on Lake McDonald was granted to Messrs. Denney & Kelly, who during the season had two gasoline launches in service, with a carrying capacity of 25 persons each. In August they launched a new boat, having a carrying capacity of 100 persons, to meet the demands of the public, and expect to have it in operation next season. The schedule for the season was arranged so that there were no delays in changing from the stage to the boat, and vice versa, connections being made during the day with all passenger trains on the Great Northern Railway at Belton.

Twelve permits were issued granting the privilege of transporting passengers in and through Glacier National Park by means of saddle and pack horses. Each permit included 25 animals, with the exception of one, Josiah Rogers's permit calling for 60 horses. W. J. Hilligoss also had 50 horses included in his permit for permanent camps, making the total number of saddle and pack horses authorized by the department 385.

Ten leases were issued for cottage sites within the park.

## ALLOTMENTS OF APPROPRIATION.

The following shows the purposes for which the appropriation of $69,200 for 1911–12 has been used:

*Expenditures.*

| | |
|---|---|
| Employees' salaries | $22,561.10 |
| Printing park map | 740.00 |
| Destroying insects infesting timber | 200.00 |
| Framing park pictures | 50.00 |
| Rock crusher and motor boat | 3,500.00 |
| Photographic map of park | 2.20 |

| | |
|---|---|
| Stationery, blanks, etc | $60.00 |
| Miscellaneous supplies | 172.30 |
| Printing and binding | 15.70 |
| Road and trail construction | 20,500.00 |
| Construction of telephone lines | 2,700.00 |
| Rental six log cabins | 500.00 |
| Construction of docks | 590.00 |
| Team, wagon, and harness | 410.00 |
| Salary and expenses of E. S. Bruce, expert lumberman | 1,000.00 |
| Traveling expenses of superintendent and rangers | 200.00 |
| Miscellaneous supplies (2 typewriters) | 186.00 |
| Traveling expenses of Supt. Logan | 104.32 |
| Traveling expenses of H. F. McCabe | 81.95 |
| Traveling expenses of E. M. Sunderland, architect | 181.70 |
| Telegraph charges | 6.94 |
| Compensation of E. M. Sunderland, architect | 350.00 |
| Geological Survey, repair of instruments | 12.00 |
| Purchase and installation of sawmill | 3,000.00 |
| Logging operations | 3,000.00 |
| Remaining unallotted | 9,075.71 |
| Total | 69,200.00 |

Purchase of rowboat authorized from saving of allotment for purchase of team, wagon, and harness, $40.95.

## RECOMMENDATIONS.

One of the most pressing needs of the park at the present time and vital to its success is the building of new trails to scenic points which have heretofore been inaccessible, and I have accordingly requested in my annual estimate that the sum of $25,000 be set aside for this purpose. Most of these trails will be along and over the Continental Divide, and it will necessarily take a considerable amount of money to put them in such condition as to afford the maximum of safety to tourists.

I recommend that a road be constructed around Lake McDonald, a distance of 25 miles, connecting with the new Government road from Belton to the lake. When this road is completed it will, without doubt, be one of the grandest scenic highways in America. For the construction of this driveway I have requested that the sum of $75,000 be set aside.

Another need of the park, which demands immediate attention, is the construction of a bridge across the Middle Fork of the Flathead River, thus lessening the distance between Belton and the foot of Lake McDonald by 1 mile. At the present time use is made of an old wooden structure which was hastily erected some years ago by the Flathead County commissioners and which is liable at any moment to go out during the spring freshets. The bridge on the park side of the river would connect with the new Government road and would be the entrance to the park. The estimated cost of a steel structure across this river is $50,000, and I have accordingly requested in my annual estimate that this sum be placed at my disposal for the erection of a bridge this coming year. At the present time the road runs up for half a mile on the river bank, thence across the wooden bridge, above referred to, and back for half a mile on the other side along the base of a mountain. In places the road is in a dangerous and bad condition.

It is also recommended that a bridge be constructed across McDonald Creek at the foot of Lake McDonald in order to connect the new Government road with the proposed road around the lake.

As it is now contemplated to erect the administration headquarters at the foot of the lake at the Fish Creek site, the building of this bridge is imperative. I estimate the cost of this bridge at $5,000.

I also most urgently recommend the purchase of 30 head of pack animals for the coming year, as the work this year on trails suffered to a considerable extent by reason of the fact that with the six head of pack horses I had on hand it was impossible to keep trail crews in supplies, and much difficulty was experienced in moving them from camp to camp.

Attention is called to the desirability of the Federal Government purchasing and gaining control of the patented areas within the confines of the park. At the present time the most desirable land at the foot of Lake McDonald is held in private ownership, and I am satisfied that the land can be purchased cheaper to-day by the Government than at a later date. Ultimately I believe that the patented lands in all our national parks will be purchased by the Government when it realizes that without control of these areas the administration will always be face to face with obstacles and difficulties in the way of proper and successful administration. Existing conditions at the foot of Lake McDonald bring up this question in a very forceful manner. As stated above, the desirable tracts are owned by individuals, the Government owning only the right of way over which the road passes. In February, 1911, the Legislature of the State of Montana passed a bill ceding jurisdiction over the lands contained within the metes and bounds of Glacier National Park to the United States, providing, however, that the jurisdiction should not vest until the United States, through the proper officers, notifies the governor of Montana that they assume police or military jurisdiction over said park. This tender upon the part of the State of Montana has not up to the present time been accepted, though there is a bill pending in Congress looking to that end, copy of which is hereto appended, and until its acceptance it will bring about confusion and hamper the administration of the park. In this connection it may also be stated that the foot of Lake McDonald is the natural entrance to the park, and I believe it would be the better policy for the Government to buy out these patentees now, instead of waiting for the park to be developed, which will naturally increase the value of these private holdings.

Another matter of vital importance to the park is the increase in the number of guards. It is impossible, with the limited number of rangers that I now have, to properly protect the game—in fact, the park in general. Hunters watch the ranger and when he is out patrolling one section they slip in on others, kill their game, and are out of the park before they can be caught. I hope to see hunting entirely eliminated from the park, on patented lands as well as on park lands. Another need for a larger ranger force is for fire patrolling, also for taking charge of trail-building crews.

In regard to leasing land within the park for residence purposes it is desirable that the term of these leases be extended to at least five years. Other leases may remain for term already established. List of permits issued is hereto appended.

Very respectfully,

W. R. LOGAN,
*Superintendent.*

The SECRETARY OF THE INTERIOR.

# APPENDIX.

## RULES AND REGULATIONS.

### General Regulations of December 3, 1910.

The following rules and regulations for the government of the
lacier National Park are hereby established and made public, pursu-
ıt to authority conferred by the act of Congress approved May 11,
)10:

1. It is forbidden to injure or disturb in any manner any of the
ıineral deposits, natural curiosities, or wonders on the Government
ınds within the park.

2. It is forbidden to cut, without a permit from the Secretary of
ıe Interior or his authorized representative, any timber growing on
ıe park lands; it is also forbidden to injure any growing timber or
eface or injure any Government property. Camping parties will be
llowed to use dead or fallen timber for fuel. When felling timber
;umps must not be left higher than 12 inches from the ground.

3. Fire should be lighted only when necessary and completely extin-
uished when not longer required. The utmost care must be exer-
ised at all times to avoid setting fire to the timber and grass.

4. Hunting or killing, wounding or capturing any bird or wild
nimal on the park lands, except dangerous animals when necessary
) prevent them from destroying life or inflicting an injury, is pro-
ibited. The outfits, including guns, traps, teams, horses, or means
f transportation used by persons engaged in hunting, killing, trap-
ing, ensnaring, or capturing such birds or wild animals, or in posses-
.on of game killed on the park lands under other circumstances than
rescribed above, will be taken up by the superintendent and held
ıbject to the order of the Secretary of the Interior, except in cases
'here it is shown by satisfactory evidence that the outfit is not the
roperty of the person or persons violating this regulation and the
ctual owner thereof was not a party to such violation. Firearms
'ill only be permitted in the park on written permission from the
ıperintendent thereof. On arrival at the first station of the park
uard, parties having firearms, traps, nets, seines, or explosives will
ırn them over to the officer in charge of the station, taking his receipt
)r them. They will be returned to the owners on leaving the park.

5. Fishing with nets, seines, traps, or by the use of drugs or ex-
losives, or in any other way than with hook and line, is prohibited.
'ishing for purposes of merchandise or profit is forbidden. Fishing
ıay be prohibited by order of the superintendent in any of the waters
f the park, or limited therein to any specified season of the year,
ntil otherwise ordered by the Secretary of the Interior.

6. No person will be permitted to reside permanently, engage in
ny business, or erect buildings, etc., upon the Government lands in
ıe park without permission in writing from the Secretary of the
nterior. The superintendent may grant authority to competent
ersons to act as guides and revoke the same in his discretion. No
ack trains will be allowed in the park unless in charge of a duly
əgistered guide.

7. Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; such lands, however, shall have the metes and bounds thereof so marked and defined that they may be readily distinguished from the park lands. Stock may be taken over the park lands to patented lands with the written permission and under the supervision of the superintendent.

8. The herding or grazing of loose stock or cattle of any kind on the Government lands in the park, as well as the driving of such stock or cattle over the same, is strictly forbidden, except in such cases where authority therefor is granted by the superintendent.

9. No drinking saloon or barroom will be permitted upon Government lands in the park.

10. Private notices or advertisements shall not be posted or displayed on the Government lands within the reservation, except such as may be necessary for the convenience and guidance of the public.

11. It is forbidden to carve or write names or otherwise deface any of the posts, signboards, platforms, seats, railings, steps, bowlders, trees, or structures of any kind in the park.

12. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who may violate any of the foregoing rules, will be summarily removed from the park and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

No lessee or licensee shall retain in his employ any person whose presence in the park shall be deemed and declared by the superintendent to be subversive of the good order and management of the reservation.

13. The superintendent designated by the Secretary is hereby authorized and directed to remove all trespassers from the Government lands in the park and enforce these rules and regulations and all the provisions of the act of Congress aforesaid.

### Regulations of December 3, 1910, Governing the Impounding and Disposition of Loose Live Stock Found in the Glacier National Park, Mont.

Horses, cattle, or other domestic live stock running at large or being herded or grazed in the Glacier National Park without authority from the Secretary of the Interior will be taken up and impounded by the superintendent, who will at once give notice thereof to the owner, if known. If the owner is not known, notices of such impounding, giving a description of the animal or animals, with the brands thereon, will be posted in six public places inside the park and in two public places outside the park. Any owner of an animal thus impounded may, at any time before the sale thereof, reclaim the same upon proving ownership and paying the cost of notice and all expenses incident to the taking up and detention of such animal, including the cost of feeding and caring for the same. If any animal thus impounded shall not be reclaimed within 30 days from notice to the owner or from the date of posting notices, it shall be sold at public auction at such time and place as may be fixed by the superintendent after 10 days' notice, to be given by posting notices in six public places in the park and two public places outside the park, and by mailing to the owner, if known, a copy thereof.

All money received from the sale of such animals and remaining after the payment of all expenses incident to the taking up, impounding, and selling thereof, shall be carefully retained by the superintendent in a separate fund for a period of six months, during which time the net proceeds from the sale of any animal may be claimed by and paid to the owner upon the presentation of satisfactory proof of ownership, and if not so claimed within six months from the date of sale such proceeds shall be turned into the Glacier National Park fund.

The superintendent shall keep a record in which shall be set down a description of all animals impounded, giving the brands found on them, the date and locality of the taking up, the date of all notices and manner in which they were given, the date of sale, the name and address of the purchaser, the amount for which each animal was sold and the cost incurred in connection therewith, and the disposition of the proceeds.

The superintendent will, in each instance, make every reasonable effort to ascertain the owner of animals impounded and to give actual notice thereof to such owner.

## CONCESSIONS IN GLACIER NATIONAL PARK.

| | |
|---|---|
| Permit No. 1, E. C. Carruth, Havre, Mont., residence (the term of this permit expired Aug. 31, 1911, and has been renewed for another year) | $25 |
| Permit No. 2, J. M. Gruber, St. Paul, Minn., residence (term expired Sept. 30, 1911, renewed) | 25 |
| Permit No. 3, Mrs. J. M. Gruber, St. Paul, Minn., residence (term expired Sept. 30, 1911, renewed) | 25 |
| Permit No. 4, Josiah Rogers, Columbia Falls, Mont., pack train | 60 |
| Permit Nos. 5 and 6, John E. Lewis, Columbia Falls, Mont., rest cabins (term expired Sept. 30, 1911, one renewed) | 10 |
| Permit No. 7, L. F. Easton, La Crosse, Wis., residence | 25 |
| Permit No. 8, John Weightman, Kalispell, Mont., stage | 54 |
| Permit No. 9, Denney & Kelley, Belton, Mont., boat | 50 |
| Permit No. 10, Charles W. Pomeroy, Kalispell, Mont., residence | 25 |
| Permit No. 11, W. L. Adair, Belton, Mont., pack train | 25 |
| Permit No. 12, Hamilton Lee, Kalispell, Mont., residence | 25 |
| Permit No. 13, John Weightman, Kalispell, Mont., freight | 10 |
| Permit No. 14, Cyrus Bellah, Belton, Mont., pack train | 25 |
| Permit No. 15, Chester Gephart, Belton, Mont., pack train | 25 |
| Permit No. 16, Norman Powell, Belton, Mont., pack train | 25 |
| Permit No. 17, Walter Gibbs, Belton, Mont., pack train | 25 |
| Permit No. 18, Charles Howes, Belton, Mont., boat | 5 |
| Special-use permit No. 1, Dennis Sullivan, Belton, Mont., grazing | 15 |

## APPROVED RATES FOR TRANSPORTATION, SEASON OF 1911.

| | | |
|---|---|---|
| Permit No. 1, to John Weightman, for stage line between Belton and Lake McDonald: | | |
| Passenger fare, each way | | $0.50 |
| Trunks and baggage, each way | | .50 |
| Hand baggage, free. | | |
| Permit No. 2, to Messrs. Denney & Kelly, for boat privilege across Lake McDonald: | | |
| Passenger fare, one way | | .75 |
| Passenger fare, round trip | | 1.25 |
| Trunks and baggage, each way | | .50 |
| Express or freight, 1,000 pounds and under | hundred weight | .25 |
| Express or freight, over 1,000 pounds | do | .20 |
| Permit No. 3, to Josiah Rogers, for saddle and pack-horse transportation: | | |
| Licensed guide, in charge, per day | | 3.50 |
| Cooks, per day | | 3.00 |
| Saddle and pack horses: | | |
| 1 to 5 days, per day | | 2.00 |
| Over 5 to 10 days, per day | | 1.50 |
| More than 10 days, per day | | 1.00 |

## CHARGES FOR CONCESSIONS, SEASON OF 1911.

*Permanent camp.*—Privilege to transport passengers through the park, using horses or wagons, providing for their care and maintenance at stated places in the reservation, to be designated as permanent camps, $25 for privilege and $1 for every saddle horse or pack animal during the season.

*Personally conducted camping parties.*—Where persons are transported through the reservation and provided for at fixed camping grounds open to all persons, camp equipage, etc., to be moved from camp to camp, a fee of $5 to be exacted, and for each horse used in connection therewith $1.

*Guides.*—Twenty-five dollars per annum, the privilege to include the use of 25 horses; for every additional animal the regular rate of $1 per horse to be exacted.

*Residents' permits.*—Twenty-five dollars for permits on Lake McDonald and Lake St. Marys of 1 acre or less; $10 for 1 acre or less at other points in the park.

*Boat privileges on lakes.*—Twenty-five dollars per season for boats having a capacity of 25 persons, $50 per season for boats having a capacity of 50 persons, all boats to be subject to inspection and approval by the U. S. Steamboat Inspection Service; the rate for 1912 (to be hereafter determined) to be based upon a per capita charge for each passenger handled during 1911.

*Transportation of passengers by wagon or stage.*—Rate of $50 for the season of 1911, the rate for 1912 (to be hereafter determined) to be based upon a per capita charge for each passenger handled during 1911.

*Rest cabins for tourists.*—Cabins situated at various points in the reservation used as rest cabins for tourists, the nominal sum of $5 per annum to be exacted.

*Hotel sites.*—Rates (to be hereafter determined) to be dependent upon the site selected, cost of building, etc.

## ACT OF MONTANA LEGISLATURE CEDING JURISDICTION.

### Senate Bill No. 46.

**An act to cede jurisdiction over the Glacier National Park to the United States, and for other purposes.**

*Be it enacted by the legislative assembly of the State of Montana:*

SECTION 1. That exclusive jurisdiction shall be, and the same is hereby, ceded to the United States over and within all the territory which is now or may hereafter be included in that tract of land in the State of Montana set aside by the act of Congress approved May eleventh, nineteen hundred and ten, for the purposes of a national park, and known and designated as "The Glacier National Park," saving, however, to the said State the right to serve civil or criminal process within the limits of the aforesaid park in any suits or prosecution for or on account of rights acquired, obligations incurred, or crimes committed in said State, but outside of said park, and saving further to the said State the right to tax persons and corporations, their franchises and property, on the lands included in said park: *Provided, however,* That jurisdiction shall not vest until the United

States, through the proper officers, notifies the governor of this State that they assume police or military jurisdiction over said park.

SEC. 2. All acts and parts of acts in conflict with this act are hereby repealed.

SEC. 3. This act shall be in force and effect from and after its passage and approval by the governor.

W. R. ALLEN,
*President of the Senate.*
W. W. McDOWELL,
*Speaker of the House.*

Approved, February 17, 1911.

EDWIN L. NORRIS, *Governor.*

Filed, February 17, 1911, 4.15 p. m.

A. N. YODER, *Secretary of State.*

## BILL ACCEPTING CESSION OF JURISDICTION (H. R. 1679, 62D CONG., 1ST SESS).

A Bill to accept the cession by the State of Montana of exclusive jurisdiction over the lands embraced within the Glacier National Park, and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That the provisions of the act of the Legislature of the State of Montana, approved February seventeenth, nineteen hundred and eleven, ceding to the United States exclusive jurisdiction over the territory embraced within the Glacier National Park, are hereby accepted, and sole and exclusive jurisdiction is hereby assumed by the United States over such territory, saving, however, to the said State the right to serve civil or criminal process within the limits of the aforesaid park in suits or prosecution for or on account of rights acquired, obligations incurred, or crimes committed in said State, but outside of said park, and saving further to the said State the right to tax persons and corporations, their franchises and property, on the lands included in said park. All the laws applicable to places under the sole and exclusive jurisdiction of the United States shall have force and effect in said park. All fugitives from justice taking refuge in said park shall be subject to the same laws as refugees from justice found in the State of Montana.

SEC. 2. That said park shall constitute a part of the United States judicial district of Montana, and the district and circuit courts of the United States in and for said district shall have jurisdiction of all offenses committed within said boundaries.

SEC. 3. That if any offense shall be committed in the Glacier National Park, which offense is not prohibited or the punishment is not specifically provided for by any law of the United States or by any regulation of the Secretary of the Interior, the offender shall be subject to the same punishment as the laws of the State of Montana in force at the time of the commission of the offense may provide for a like offense in said State; and no subsequent repeal of any such law of the State of Montana shall affect any prosecution for said offense committed within said park.

SEC. 4. That all hunting or the killing, wounding, or capturing at any time of any bird or wild animal, except dangerous animals when it is necessary to prevent them from destroying human lives or inflicting an injury, is prohibited within the limits of said park; nor shall any fish be taken out of the waters of the park by means of seines, nets, traps, or by the use of drugs or any explosive substances or compounds, or in any other way than by hook and line, and then only at such seasons and in such times and manner as may be directed by the Secretary of the Interior. That the Secretary of the Interior shall make and publish such rules and regulations as he may deem necessary and proper for the management and care of the park and for the protection of the property therein, especially for the preservation from injury or spoliation of all timber, mineral deposits other than those legally located prior to the passage of the act of May eleventh, nineteen hundred and ten (Thirty-sixth Statutes, page three hundred and fifty-four), natural curiosities, or wonderful objects within said park, and for the protection of the animals and birds in the park from capture or destruction, and to prevent their being frightened or driven from the park; and he shall make rules and regulations governing the taking of fish from the streams or lakes in the park. Possession within said park of the dead bodies, or any part thereof, of any wild bird or animal, shall be prima facie evidence that the person or persons having the same are guilty of violating this act. Any person or persons, or stage or express company, or railway company, receiving for transportation any of said animals, birds, or fish so killed, caught, or taken, shall be deemed guilty of a misdemeanor and shall be fined for every such offense not exceeding three hundred dollars. Any person found guilty of violating any of the provisions of this act, or any rule or regulation that may be promulgated by the Secretary of the Interior with reference to the management and care of the park, or for the protection of the property therein, for the preservation from injury or spoliation of timber, mineral deposits, other than those legally located prior to the passage of the act of May eleventh, nineteen hundred and ten (Thirty-sixth Statutes, page three hundred and fifty-four), natural curiosities, or wonderful objects within said park, or for the protection of the animals, birds, or fish in the park, shall be deemed guilty of a misdemeanor and shall be subject to a fine of not more than one thousand dollars, or imprisonment not exceeding two years, or both, and be adjudged to pay all costs of the proceedings.

SEC. 5. That all guns, traps, teams, horses, or means of transportation of every nature or description used by any person or persons within said park limits when engaged in killing, trapping, ensnaring, or capturing such wild beasts, birds, or wild animals shall be forfeited to the United States and may be seized by the officers in said park and held pending the prosecution of any person or persons arrested under charge of violating the provisions of this act, and upon conviction under this act of such person or persons using said guns, traps, teams, horses, or other means of transportation, such forfeiture shall be adjudicated as a penalty in addition to the other punishment provided in this act. Such forfeited property shall be disposed of and accounted for by and under the authority of the Secretary of the Interior.

SEC. 6. That any person who shall, within the said above-mentioned park, commit any damage, injury, or spoliation to or upon any building, fence, hedge, gate, guidepost, tree, wood, underwood, timber, garden, crops, vegetables, plants, land, springs, mineral deposits other than those legally located prior to the passage of the act of May eleventh, nineteen hundred and ten (Thirty-sixth Statutes, page three hundred and fifty-four), natural curiosities, or other matter or thing growing or being thereon, or situated therein, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be subject to a fine of not more than one hundred dollars and be adjudged to pay all costs of the proceedings.

SEC. 7. That any United States commissioner, duly appointed by the United States court for the district of Montana and residing in said district, shall have power and jurisdiction to hear and act upon all complaints made of any and all violations of this act or of the rules and regulations made by the Secretary of the Interior for the government of the park and for the protection of the animals, birds, and fish, and objects of interest therein, and for other purposes authorized by this act. That any such commissioner shall have power, upon sworn complaint, to issue process in the name of the United States for the arrest of any person charged with the violation of this act or of the rules and regulations made by the Secretary of the Interior, as aforesaid, or with any misdemeanor or other like offense the punishment provided for which does not exceed a fine of one hundred dollars, and to try the person thus charged, and, if found guilty, to impose the punishment and adjudge the forfeiture prescribed. In all cases of conviction an appeal shall lie from the judgment of any such commissioner to the United States district court for the district of Montana. The said United States district court shall prescribe rules of procedure and practice for said commissioner in the trial of cases and with reference to said appeals.

SEC. 8. That any such commissioner shall also have power to issue process as hereinbefore provided for the arrest of any person charged with the commission, within said boundaries, of any criminal offense not covered by the provisions of section six of this act, to hear the evidence introduced, and if he is of opinion that probable cause is shown for holding the person so charged for trial, shall cause such person to be safely conveyed to a secure place of confinement, within the jurisdiction of the United States district court for the district of Montana, and certify a transcript of the record of his proceedings and the testimony in the case to said court, which court shall have jurisdiction of the case: *Provided*, That the said commissioner shall grant bail in all cases bailable under the laws of the United States or of said State.

SEC. 9. That all process issued by the commissioner shall be directed to the marshal of the United States for the district of Montana, but nothing herein contained shall be so construed as to prevent the arrest by any officer or employee of the Government, or any person employed by the United States in the policing of said reservation, within said boundaries, without process, of any person taken in the act of violating the law or this act, or the regulations prescribed by said Secretary as aforesaid.

SEC. 10. That such commissioner and the marshal of the United States and his deputies in the district of Montana shall be paid the same fees and compensation as are now provided by law for like services in said district.

SEC. 11. That all fees, costs, and expenses arising in cases under this act and properly chargeable to the United States shall be certified, approved, and paid as are like fees, costs, and expenses in the courts of the United States.

SEC. 12. That all fines and costs imposed and collected shall be deposited by said commissioner of the United States or the marshal of the United States collecting the same with the clerk of the United States district court for the district of Montana.

## MAGAZINE ARTICLES ON GLACIER NATIONAL PARK.

Harper's Weekly, vol. 52 (Dec. 26, 1908), p. 26. An ice playground for tourists, by K. L. Smith.
National Geographic Magazine, vol. 21 (March, 1910), pp. 215–223. A new national park, by G. E. Mitchell.
Outlook, vol. 94 (Apr. 16, 1910), p. 826. The proposed Glacier National Park.
Overland Monthly, 2d s., vol. 53 (June, 1909), pp. 495–501. Glacier Park, by H. S. Sanders.
Recreation, vol. 31 (May, 1910), pp. 211–216. America's next great playground: Glacier Park in northwestern Montana, by W. T. Hornaday.
Review of Reviews, vol. 41 (June, 1910), pp. 710–717. A new playground for the nation, by G. E. Mitchell.
Science, n. s., vol. 2 (Dec. 13, 1895), pp. 792–796. A glacier in the Montana Rockies, by L. W. Chaney, jr.
Scientific American Supplement, vol. 48 (Sept. 23, 1899), p. 19854. The glaciers in Montana, by G. B. Grinnell.
Sierra Club Bulletin, vol. 7 (June, 1910), pp. 225–228. The new Glacier National Park.
Technical World, vol. 14 (November, 1910), pp. 287–294. Land gift to wild animals, by G. E. Mitchell.
World's Work, vol. 16 (May, 1908), pp. 10248–10250. Crown of the continent, by A. W. Greeley.

# REPORT ON PLATT AND WIND CAVE NATIONAL PARKS, SULLYS HILL PARK, CASA GRANDE RUIN, MUIR WOODS, PETRIFIED FOREST, AND OTHER NATIONAL MONUMENTS, INCLUDING LIST OF BIRD RESERVES.

# REPORT ON PLATT AND WIND CAVE NATIONAL PARKS, SULLYS HILL PARK, CASA GRANDE RUIN, MUIR WOODS, PETRIFIED FOREST, AND OTHER NATIONAL MONUMENTS, TOGETHER WITH LIST OF BIRD RESERVES.

## PLATT NATIONAL PARK.

By the acts of Congress of July 1, 1902 (32 Stat., 641), and April 21, 1904 (33 Stat., 220), 629.33 and 218.89 acres, respectively, at the town of Sulphur, Okla. (then Ind. T.), were segregated as the "Sulphur Springs Reservation," which designation, by joint resolution approved June 29, 1906, was changed to "Platt National Park."

The park, with a total area of 848.22 acres, extends in irregular form a distance of approximately 3 miles from northeast to southwest along Travertine Creek, including a portion of Rock Creek, which empties into the former, and it has a circuit of 9 miles.

Within the park are 33 known mineral and 2 nonmineral springs. The principal groups are the Bromide and Bromide-Sulphur Springs in the southwestern part of the park, Beach and Pavilion Springs in the northwestern corner, and the Wilson group in the southern part. Sulphur springs predominate, but there are also bromide, soda, and iron varieties. The Antelope and Buffalo Springs, nonmineral in character, are situated at the extreme northeastern end of the park with an elevation of 1,083 feet above sea level and an approximate discharge of 5,000,000 gallons daily into Travertine Creek. A spring has recently been discovered known as Medicine Spring. The work of completing the development and installing water from this spring in the pavilion at Bromide Springs has been completed and the park has been generally improved.

Permits for the transportation of passengers in and through the park were issued for seven automobiles—five for two-seated hacks and two for three-seated hacks—also several permits for other privileges. A license fee was exacted in each instance and the total revenues derived from permits was $475.75.

There were 768 campers in the camping grounds who remained more than three days, and the park records show that 124,078 persons visited Bromide Springs during that period. Many of these visitors are residents of the city of Sulphur and they were counted each time they visited the springs. From the best obtainable information the actual number of visitors to the park, inclusive of the residents of Sulphur, was about 30,000.

There were driven through the park 4,594 head of cattle. Most of them were driven through in changing from one pasture to another or in order to get them to water or to where water was accessible. Quite a number of cattle, however, were driven through the park for shipment to market or for sale to local butchers.

The appropriation for the care and maintenance of the park for the last year, including all personal service, was but $5,000, which was barely sufficient to pay the salaries of the superintendent and other park employees. The appropriation for the next fiscal year for the maintenance of the park, including bridges, roads, trails, and sewerage, is $10,000. Six thousand dollars of this will be required to pay the salaries of employees and $4,000 is not a sufficient amount to construct the sewer. However, an estimate has been made to Congress for an appropriation of $53,445 for this park for the fiscal year ending June 30, 1913, which, if appropriated, will enable the department to construct a proper sewer through the park.

## REGULATIONS OF JUNE 10, 1908.

Pursuant to the authority conferred by the acts of Congress approved July 1, 1902 (32 Stat., 656), April 21, 1904 (33 Stat., 220), and the Oklahoma statehood act of June 16, 1906 (34 Stat., 272), the following rules and regulations for the government of the Platt National Park (formerly Sulphur Springs Reservation), in Oklahoma, are hereby established and made public:

1. It is forbidden to injure in any manner any of the springs, mineral deposits, or natural features within the park.

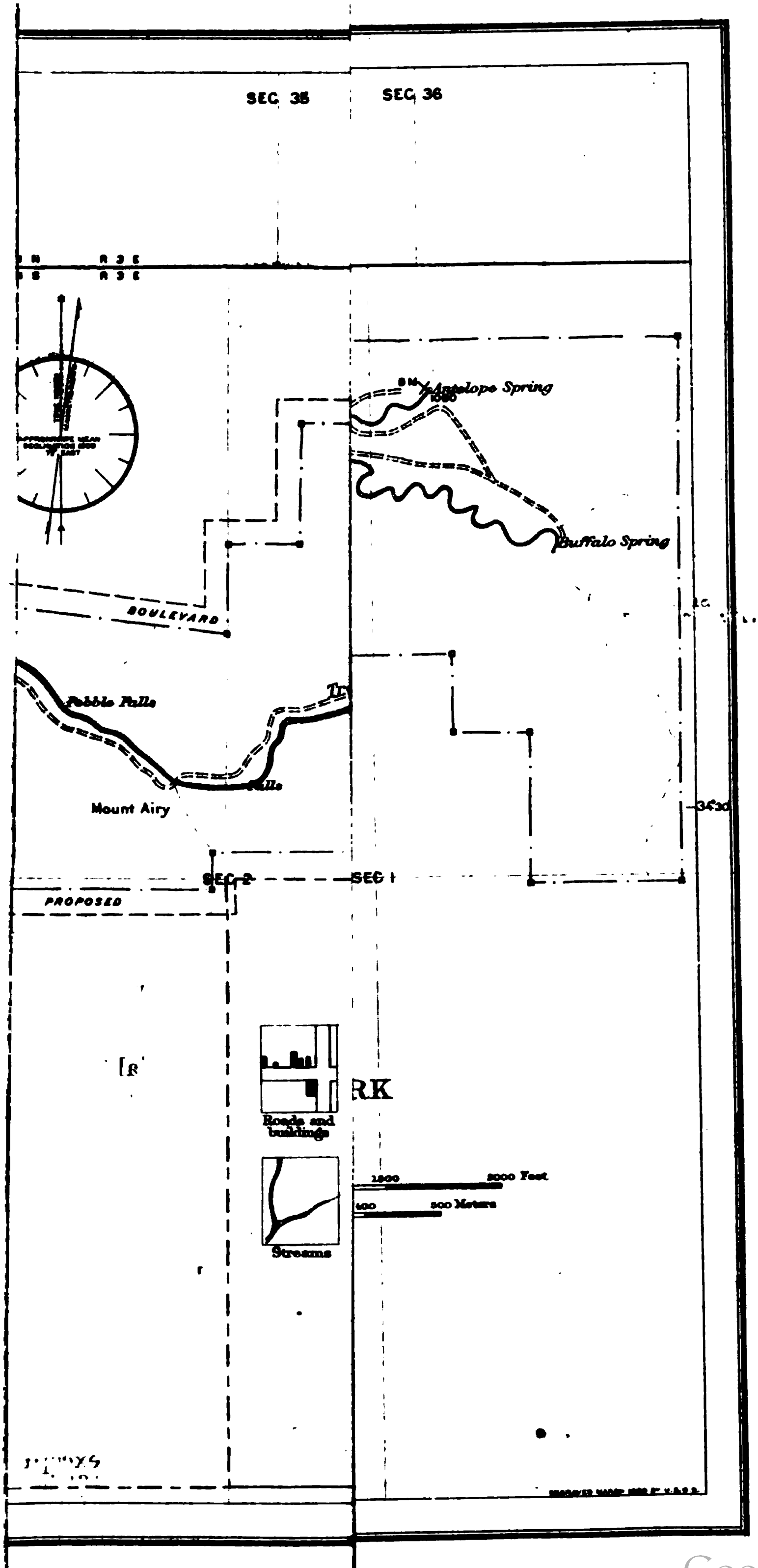
2. It is forbidden to cut or injure any timber or plants growing on the park lands, or to deface or injure any Government property.

3. No camping shall be permitted within 1,000 feet of any spring, nor upon any land except such as may be specifically designated for that purpose by the superintendent. Fires shall not be lighted except by the express permission of the superintendent; when so allowed, campers shall use only dead or fallen timber for fuel, and the utmost care must be exercised at all times to avoid setting fire to the timber and grass.

4. It is forbidden for any person to deposit garbage or refuse upon the park lands, except at places designated for that purpose by the superintendent, or to contaminate any of the springs or streams therein, or to divert or conduct the waters of such springs or streams from the natural or regular course.

5. No person shall remove from any of the bromide, iron, or soda springs more than 1 gallon of water in any one day, nor remove from any of the other springs more than 5 gallons in any one day, nor shall any water be taken therefrom for commercial purposes, except in pursuance of a license issued by the Secretary of the Interior. Whenever in his judgment the circumstances warrant, the superintendent may prohibit the use of the waters of any of the springs in the park other than for immediate drinking purposes at such springs, the facts in such case to be reported to the Secretary of the Interior.

6. Hunting or killing, wounding or capturing any bird or wild animal on the park lands, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed on the park lands under other circumstances than prescribed above, will be taken up by the superintendent and held subject to the order of the Secretary of the Interior, except in cases where it is shown by satisfactory evidence that the outfit is not


SEC 35
SEC 36
R 3 E
R 3 E
BM
Antelope Spring
1060
Buffalo Spring
BOULEVARD
Pebble Falls
Tr
Falls
Mount Airy
SEC 2
SEC 1
PROPOSED
RK
34°30'
Roads and buildings
Streams
1000
2000 Feet
400
500 Meters

the property of the person or persons violating this regulation and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof.

7. Fishing with nets, seines, traps, or by the use of drugs or explosives, or in any other way than with hook and line, is prohibited. Fishing for purposes of merchandise or profit is forbidden. Fishing may be prohibited by order of the superintendent in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

8. No person will be permitted to reside permanently, engage in any business, or erect buildings or other improvements in the park, without permission, in writing, from the Secretary of the Interior.

9. The herding, grazing, or otherwise trespassing of cattle or loose stock of any kind within the park is strictly forbidden. Stock or cattle may be driven across the park, but must be confined to the roads and kept in motion under competent care while in the reservation.

10. No vehicles will be permitted to travel through the park except upon the roads designated for such traffic by the superintendent, and driving or riding over roads or bridges at a high rate of speed is prohibited.

11. Private notices or advertisements shall not be posted or displayed within the park, except such as may be necessary for the convenience and guidance of the public.

12. The sale of intoxicating liquors in the park is strictly forbidden.

13. No gambling or game of chance shall be permitted within the limits of the park; nor shall any person use profane or obscene language, commit or maintain a nuisance, or be guilty of disorderly conduct or any act involving immorality therein.

14. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the park and will not be allowed to return without permission, in writing, from the Secretary of the Interior or the superintendent of the park.

No lessee or licensee shall retain in his employ any person whose presence in the park shall be deemed and declared by the superintendent to be subversive of the good order and management of the reservation.

15. Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and be subjected to a fine, as provided by the act of April 21, 1904, of not less than $5 nor more than $100 and may be imprisoned for a term of not more than six months for each offense.

## WIND CAVE NATIONAL PARK.

The act of Congress approved January 9, 1903 (32 Stat., 765), reserved a tract of land containing 10,522 acres in the State of South Dakota, 12 miles east of the town of Hot Springs and about the same distance southeast of Custer, as a public park, to be known as the Wind Cave National Park.

With the consent of the Attorney General, Mr. Seth Bullock, marshal for the district of South Dakota, has been continued in general charge of the reservation in an advisory capacity, and the superintendent confers with him in regard to the administration thereof. The course pursued has aided in the effective management of the park during the park season. The present superintendent, A. C. Boland, was appointed May 1, 1911, succeeding R. J. Pilcher, who resigned on that date.

At the time of the creation of the park there were 10 entries covering lands within the park, aggregating 1,519.15 acres. Since that date the Government has secured title to all of the lands within the park except the NE. ¼ NW. ¼ and NW. ¼ NE. ¼, sec. 35, T. 5 S., R. 5 E., Black Hills meridian. Jonathan C. West patented December 31, 1904, 80 acres, which is now owned by W. A. Rankin, formerly a superintendent of the park. For administrative reasons it is desirable that this private holding be eliminated from the park and it is recommended that adequate appropriation be made by Congress for the purpose.

On May 8, 1911, a revocable permit was granted Mrs. P. T. Paulsen to furnish meals to tourists at 50 cents each. No complaints have been made of the service rendered under this permit.

The number of tourists through the park during the year was 3,887, the majority of whom entered the reservation in automobiles.

During the season 12 permits were granted for the transportation of passengers in and through the park at the rate of $50 per vehicle. Eleven of the permits were for the transportation of passengers by automobiles and one for the use of wagons.

No applications were received for the driving of cattle or other stock through the park, and no change was made during the year in the regulations promulgated June 10, 1908, for the government of the park.

A barn was constructed for the use of the superintendent, and considerable improvement work was done around the residence of the superintendent.

The roads and bridges require more or less attention continuously, but are reported to be in good condition.

In the cave considerable repair work was done to bridges, stairs, and paths and several new stairways constructed. Considerable exploration work was completed in the cave with a view toward ascertaining the practicability of opening more of it to the public. As nothing extraordinary in character was discovered, the opening of further sections will be deferred until, considering other park needs, more money is available for the purpose. The question of providing electric lights in the cave is under consideration.

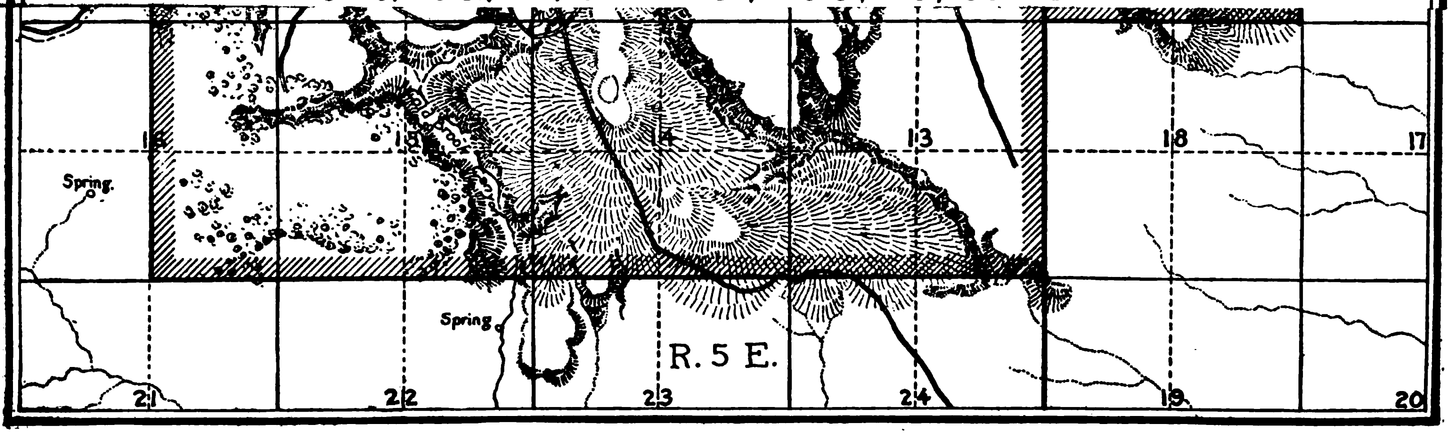
## GENERAL REGULATIONS OF JUNE 10, 1908.

Pursuant to authority conferred by the act of Congress approved January 9, 1903, the following rules and regulations for the government of the Wind Cave National Park, in South Dakota, are hereby established and made public:

1. It is forbidden to remove or injure the specimens or formations in and around the Wind Cave, or to deface the same by written inscription or otherwise, or to injure or disturb in any manner or carry off any of the mineral deposits, specimens, natural curiosities, or wonders on the Government lands within the park.

# WIND CAVE NATIONAL PARK

Embracing Sections 34, 35 and 36, T. 5 S., R. 5;
Sections 1, 2, 3, E½ of 4, E½ of 9, and Sec's 10, 11, 12, 13, 14, 15, E½
of 16, T. 6 S., R. 5; Section 31, T. 5 S., R. 6; Sections 6



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2. No person shall be permitted to enter the cave unless accompanied by the superintendent or other park employee or by competent guides.

3. It is forbidden to cut or injure any timber growing on the park lands, or to deface or injure any Government property. Camping parties will be allowed to use dead or fallen timber for fuel.

4. Fires should be lighted only when necessary and completely extinguished when not longer required. The utmost care must be exercised at all times to avoid setting fire to the timber and grass.

5. Hunting or killing, wounding or capturing any bird or wild animal on the park lands, except dangerous animals when necessary to prevent them from destroying life or inflicting an injury, is prohibited. The outfits, including guns, traps, teams, horses, or means of transportation used by persons engaged in hunting, killing, trapping, ensnaring, or capturing such birds or wild animals, or in possession of game killed on the park lands under other circumstances than prescribed above, will be taken up by the superintendent and held subject to the order of the Secretary of the Interior, except in cases where it is shown by satisfactory evidence that the outfit is not the property of the person or persons violating this regulation and the actual owner thereof was not a party to such violation. Firearms will only be permitted in the park on written permission from the superintendent thereof.

6. Fishing in any other way than with hook and line is forbidden. Fishing may be prohibited by order of the superintendent in any of the waters of the park, or limited therein to any specified season of the year, until otherwise ordered by the Secretary of the Interior.

7. No person will be permitted to reside permanently, engage in any business, or erect buildings, etc., upon the Government lands in the park without permission in writing from Secretary of the Interior. The superintendent may grant authority to competent persons to act as guides and revoke the same in his discretion. No pack trains will be allowed in the park unless in charge of a duly registered guide.

8. Owners of patented lands within the park limits are entitled to the full use and enjoyment thereof; such lands, however, shall have the metes and bounds thereof so marked and defined that they may be readily distinguished from the park lands. Stock may be taken over the park lands to patented lands with the written permission and under the supervision of the superintendent.

9. The herding or grazing of loose stock or cattle of any kind on the Government lands in the park, as well as the driving of such stock or cattle over the same, is strictly forbidden, except in such cases where authority therefor is granted by the superintendent.

10. No drinking saloon or barroom will be permitted upon Government lands in the park.

11. Private notices or advertisements shall not be posted or displayed on the Government lands within the reservation, except such as may be necessary for the convenience and guidance of the public.

12. Persons who render themselves obnoxious by disorderly conduct or bad behavior, or who violate any of the foregoing rules, will be summarily removed from the park and will not be allowed to return without permission in writing from the Secretary of the Interior or the superintendent of the park.

No lessee or licensee shall retain in his employ any person whose presence in the park shall be deemed and declared by the superintendent to be subversive of the good order and management of the reservation.

13. Any person who violates any of the foregoing regulations will be deemed guilty of a misdemeanor, and, upon conviction, be fined not more than $1,000, or be imprisoned not more than 12 months. or both, in the discretion of the court, as provided by the act creating the park.

14. The superintendent designated by the Secretary is hereby authorized and directed to remove all trespassers from the Government lands in the park and enforce these rules and regulations and all the provisions of the act of Congress aforesaid.

## REGULATIONS OF JUNE 10, 1908, GOVERNING THE IMPOUNDING AND DISPOSITION OF LOOSE LIVE STOCK.

Horses, cattle, or other domestic live stock running at large or being herded or grazed on Government lands in the Wind Cave National Park without authority therefor, will be taken up and impounded by the superintendent, who will at once give notice thereof to the owner, if known. If the owner is not known, notice of such impounding, giving a description of the animal or animals, with the brands thereon, will be posted in six public places inside the park and in two public places outside the park. Any owner of an animal thus impounded may, at any time before the sale thereof, reclaim the same upon proving ownership and paying the cost of notice and all expenses incident to the taking up and detention of such animal, including the cost of feeding and caring for the same. If any animal thus impounded shall not be reclaimed within 30 days from notice to the owner or from the date of posting notices, it shall be sold at public auction at such time and place as may be fixed by the superintendent after 10 days' notice, to be given by posting notices in six public places in the park and two public places outside the park, and by mailing to the owner, if known, a copy thereof.

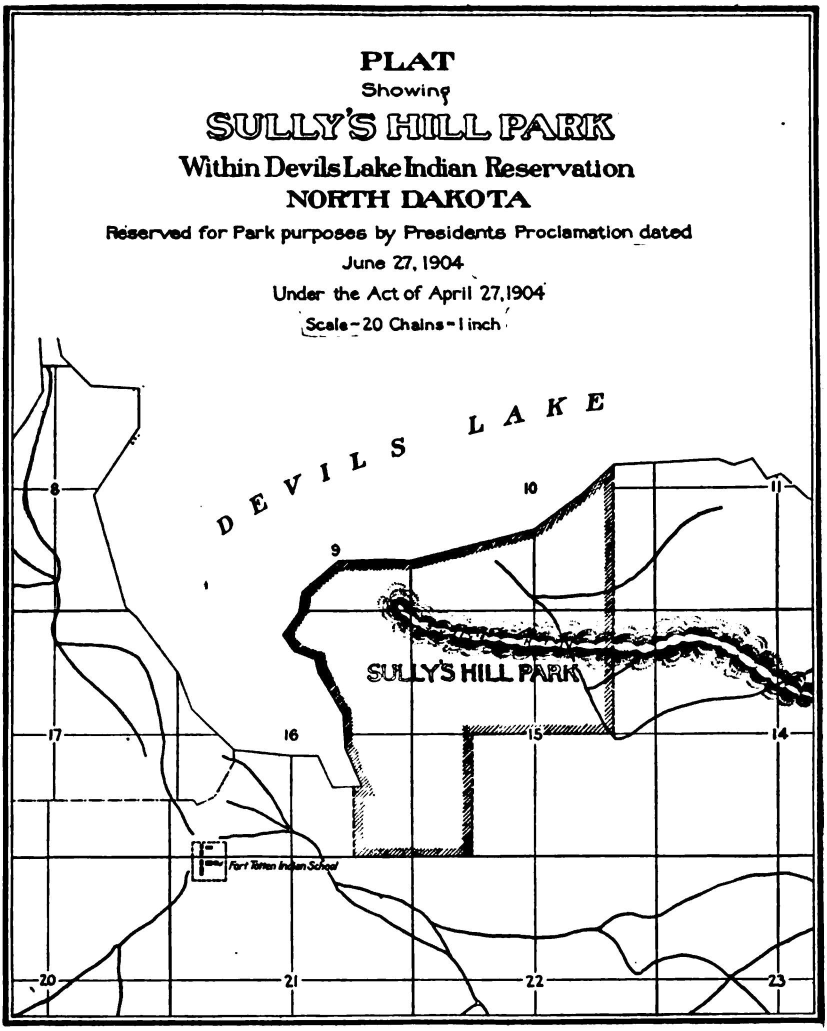
All money received from the sale of such animals and remaining after the payment of all expenses incident to the taking up, impounding, and selling thereof, shall be carefully retained by the superintendent in a separate fund for a period of six months, during which time the net proceeds from the sale of any animal may be claimed by and paid to the owner upon the presentation of satisfactory proof of ownership, and if not so claimed within six months from the date of sale such proceeds shall be turned into the Wind Cave National Park fund.

The superintendent shall keep a record in which shall be set down a description of all animals impounded, giving the brands found on them, the date and locality of the taking up, the date of all notices and manner in which they were given, the date of sale, the name and address of the purchaser, the amount for which each animal was sold, and the cost incurred in connection therewith, and the disposition of the proceeds.

The superintendent will, in each instance, make every reasonable effort to ascertain the owner of animals impounded and to give actual notice thereof to such owner.

## SULLYS HILL PARK.

This reservation, set aside by Executive proclamation dated June 2, 1904, under the act approved April 27, 1904 (33 Stat., 319), contains about 780 acres. It is located on the south shore of Devils Lake, N. Dak., having about 2 miles of shore line, with its western boundary 1 mile east of the Fort Totten Indian School. Inasmuch as no appropriation has been made for the care and protection of this reservation, Mr. Charles M. Ziebach, in charge of the Indian industrial school (Fort Totten), has been continued as acting superintendent, and required to exercise the necessary supervision and control over the same until appropriation is made therefor by Congress.


PLAT
Showing
SULLY'S HILL PARK
Within Devils Lake Indian Reservation
NORTH DAKOTA
Reserved for Park purposes by Presidents Proclamation dated
June 27, 1904
Under the Act of April 27, 1904
Scale - 20 Chains - 1 inch
DEVILS LAKE
8
9
10
11
SULLY'S HILL PARK
17
16
15
14
Fort Totten Indian School
20
21
22
23

Township No. 152 North, Range No. 65 West.

FIG. 1.—Map of Sullys Hill Park.

The tract is well wooded and has an ample supply of water and many rugged hills, among which, on the western boundary, lies what is known as Sullys Hill. In the southwestern part is a small body of water known as Sweet Water Lake, west of which the surface is generally level and the soil good.

No buildings or improvements of any kind have been made in the reservation, and Congress has made no appropriation for the care thereof. If this park is to be continued under the supervision of the Secretary of the Interior, it is desirable that funds be provided for the protection and improvement thereof, and an estimate in the sum of $2,500 has accordingly been submitted to Congress for such purpose.

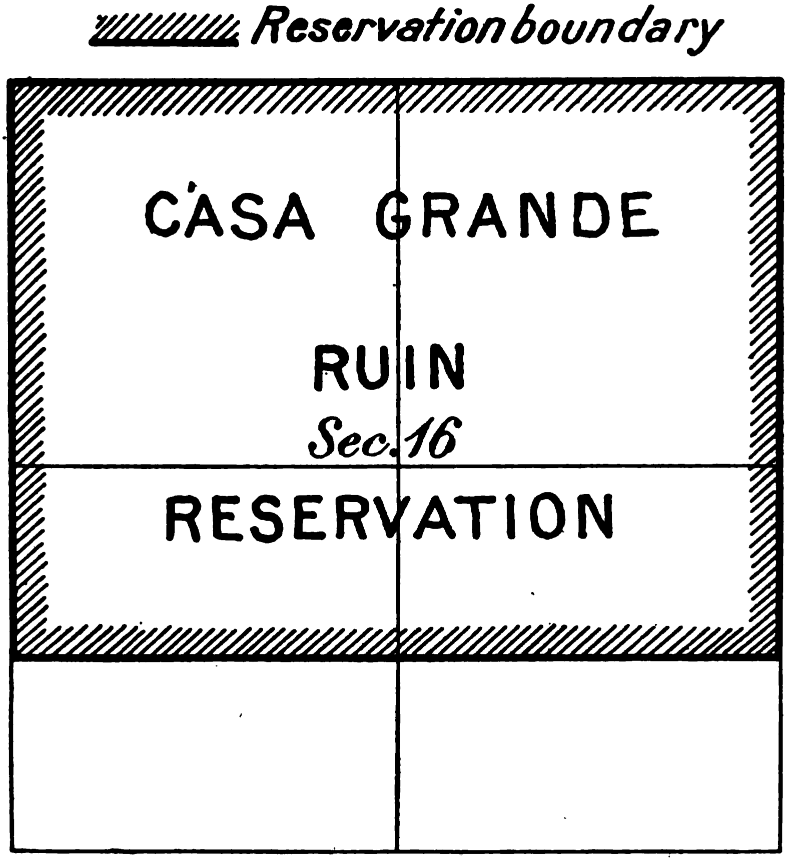


Fig. 2.—Casa Grande Ruin Reservation, Ariz., embracing the NW. ¼, the NE. ¼, the N. ½ of the SW. ¼, and the N. ½ of the SE. ¼ of sec. 16, T. 5 S., R. 8 E., Gila and Salt River meridian; created March 2, 1889.

## CASA GRANDE RUIN.

This reservation is located near Florence, Ariz., about 18 miles northeast of Casa Grande station, on the Southern Pacific Railroad, and contains about 480 acres. It was set aside by Executive order dated June 22, 1902, under the act approved March 2, 1889 (25 Stat., 961). By presidential proclamation of December 10, 1909, the boundaries of the reservation were changed by the elimination of 120 acres on which there were no prehistoric ruins and the inclusion of a tract of 120 acres adjoining the reservation on the east, on which are located important mounds of historic and scientific interest.

Casa Grande is an Indian ruin of undetermined antiquity, which was discovered in 1694 by Padre Kino, a Jesuit missionary. This great house is said to be the most important ruin of its type in the Southwest, and as such it has strong claims for archæological study, repair, and permanent preservation. It is built of puddled clay molded into walls and dried in the sun, and is of perishable character. The main building was originally five or six stories high and covered a space 59 feet by 43 feet 3 inches. The walls have been gradually disintegrating, owing to the action of the elements. A corrugated iron roof has heretofore been erected over this building to protect it, so far as practicable, from further decay.

Surrounding Casa Grande proper is a rectangular walled inclosure or "compound," having an area of about 2 acres. In this inclosure, which has been called Compound A, excavations conducted under the Bureau of American Ethnology have resulted in the uncovering of a number of buildings or clusters of rooms, and others are known to exist but have not been excavated. Two other compounds were discovered and designated, respectively, Compound B and Compound C, but the latter has not been excavated and is still in the form of a mound. These three compounds together constitute what is known as the Casa Grande group of ruins. As a result of this work, conducted under the Bureau of American Ethnology, the points of interest to visitors have been materially augmented. The ground plan of the ruin was increased by some 58 rooms, a number of plazas and surrounding walls, making the total number of rooms now open on the ground floor 100.

Mr. Frank Pinkley, the custodian, who resides on the reservation, reports that the number of visitors during the year were fully up to the average and the usual interest seems to be shown by persons from the various parts of the United States in the ruin. He calls attention to the need of literature in relation to the ruin for distribution among visitors as a means of greatly increasing the interest of the public in the reservation.

## NATIONAL MONUMENTS AND PRESERVATION OF AMERICAN ANTIQUITIES.

### GENERAL STATEMENT.

By an act approved June 8, 1906, entitled "An act for the preservation of American antiquities," the President of the United States is authorized, "in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments." Under such authority the President has created the following monuments:

*National monuments administered by Interior Department.*

| Name. | State. | Date. | Area. |
|---|---|---|---|
| | | | *Acres.* |
| Devils Tower | Wyoming | Sept. 24, 1906 | 1,152 |
| Montezuma Castle | Arizona | Dec. 8, 1906 | 160 |
| El Morro | New Mexico | do | 160 |
| Chaco Canyon | do | Mar. 11, 1907 | 20,629 |
| Muir Woods[1] | California | Jan. 9, 1908 | 295 |
| Pinnacles | do | Jan. 16, 1908 | [2] 2,080 |
| Tumacacori | Arizona | Sept. 15, 1908 | 10 |
| Navajo[3] | do | Mar. 20, 1909 | [4] 600 |
| Mukuntuweap | Utah | July 31, 1909 | [2] 15,840 |
| Shoshone Cavern | Wyoming | Sept. 21, 1909 | 210 |
| Natural Bridges[5] | Utah | Sept. 25, 1909 | [2] 2,740 |
| Gran Quivira | New Mexico | Nov. 1, 1909 | [2] 160 |
| Sitka | Alaska | Mar. 23, 1910 | [2] 57 |
| Rainbow Bridge[3] | Utah | May 30, 1910 | 160 |
| Lewis and Clark Cavern | Montana | May 16, 1911 | 160 |
| Colorado | Colorado | May 24, 1911 | 13,883 |
| Petrified Forest | Arizona | July 31, 1911 | 25,625 |

[1] Donated to the United States.
[2] Estimated area.
[3] Within an Indian reservation.
[4] Based on 15 known ruins, with a reserved area of 40 acres surrounding each ruin. Exterior limits of tract specified in proclamation contain 918,310 acres.
[5] Originally set aside by proclamation of April 16, 1908, and contained only 120 acres.

The following regulations for the protection of national monuments were promulgated on November 19, 1910:

1. Fires are absolutely prohibited.
2. No firearms are allowed.
3. No fishing permitted.
4. Flowers, ferns, or shrubs must not be picked, nor may any damage be done to the trees.
5. Vehicles and horses may be left only at the places designated for this purpose.
6. Lunches may be eaten only at the spots marked out for such use, and all refuse and litter must be placed in the receptacles provided.
7. Pollution of the water in any manner is prohibited; it must be kept clean enough for drinking purposes.
8. No drinking saloon or barroom will be permitted.
9. Persons rendering themselves obnoxious by disorderly conduct or bad behavior, or who may violate any of the foregoing rules, will be summarily removed.

*Names and addresses of officers having supervision of national monuments.*

F. C. Dezendorf, new custom-house building, San Francisco, Cal.:
  Muir Woods National Monument, Cal.
  Pinnacles National Monument, Cal.
Gratz W. Helm, Federal building, Los Angeles, Cal.:
  Montezuma Castle National Monument, Ariz.
  Petrified Forest National Monument, Ariz.
  Tumacacori National Monument, Ariz.
  Navajo National Monument, Ariz.
George E. Hair, Federal building, Salt Lake City, Utah:
  Mukuntuweap National Monument, Utah.
  Natural Bridges National Monument, Utah.
  Rainbow Bridge National Monument, Utah.
Leroy O. Moore, Santa Fe, N. Mex.:
  El Morro National Monument, N. Mex.
  Chaco Canyon National Monument, N. Mex.
  Gran Quivira National Monument, N. Mex.

H. C. Cullom, Helena, Mont., Lewis and Clark Cavern National Monument, Mont.
Adelbert Baker, Cheyenne, Wyo.:
  Devils Tower National Monument, Wyo.
  Shoshone Cavern National Monument, Wyo.
A. Christensen, special agent in charge field service, Alaska (219 Federal building, Seattle, Wash.), Sitka National Monument, Alaska.

By proclamation of May 24, 1911, one new national monument under the department has been created during the year, designated as the Colorado National Monument, Colo. The lands embraced within this reservation are in part identical with those included within the boundaries of the Monument National Park proposed in H. R. 22549, introduced in the Sixty-first Congress, and which failed of passage. The monument, however, contains nearly 5,000 acres of land less than the area proposed to be segregated by the national-park bill.

In the case of the Lewis and Clark Cavern Monument, Mont., set aside by proclamation of May 11, 1908, a new proclamation was issued on May 16, 1911, more specifically defining the boundaries thereof.

The Pinnacles National Monument, Cal., was set aside by a proclamation dated January 16, 1908, at which time it was under the supervision of the Secretary of Agriculture, being within a national forest. By proclamation dated December 12, 1910, the lands on which this monument is located were eliminated from the national forest, and since that date it has been under supervision of the Secretary of the Interior.

The Petrified Forest National Monument, Ariz., was originally set aside on December 8, 1906, with an area of 60,776 acres. The definite location of the principal deposits of silicified wood was not known, the intention being to reduce the area after the lands could be examined and the location of the valuable deposits determined. During the year Dr. George P. Merrill, head curator of geology, National Museum, visited the reservation at the instance of this department and submitted a report thereon recommending the reduction of the metes and bounds of the reservation and suggesting the segregation of such portions thereof as are desirable for the use of collectors having permits under the act of June 8, 1908, to take specimens of silicified wood from the reservation. This report met with the approval of the department, and accordingly on July 31, 1911, a new proclamation was issued reducing the area of the Petrified Forest National Monument to 25,625 acres.

The supervision of these various monuments has, in the absence of any specific appropriation for their protection and improvement, necessarily been intrusted to the field officers of the department having charge of the territory in which the several monuments are located. This supervision in many instances is necessarily limited, and considerable difficulty has been experienced in protecting the monuments from vandalism, unauthorized exploration, and spoliation. The department has recommended that adequate appropriation be made by Congress for the protection and improvement of these reservations, only such monuments as in the judgment of the Secretary of the Interior are subject to depredations by vandals and unauthorized collections on the part of the public to be provided with a custodian or superintendent.

*National monuments administered by the Department of Agriculture.*

| Name. | State. | Date. | Area. |
|---|---|---|---|
| | | | *Acres.* |
| Cinder Cone | California | May 6, 1907 | [1] 5,120 |
| Lassen Peak | do | do | [1] 1,280 |
| Gila Cliff dwellings | New Mexico | Nov. 16, 1907 | 160 |
| Tonto | Arizona | Dec. 19, 1907 | [1] 640 |
| Grand Canyon | do | Jan. 11, 1908 | [1] 806,400 |
| Jewel Cave | South Dakota | Feb. 7, 1908 | [1] 1,280 |
| Wheeler | Colorado | Dec. 17, 1908 | 300 |
| Mount Olympus | Washington | Mar. 2, 1909 | [1] 608,640 |
| Oregon Caves | Oregon | July 12, 1909 | 480 |
| Devil's Postpile | California | July 6, 1911 | 800 |

[1] Estimated area.

*National monument administered by the War Department.*

| Name. | State. | Date. | Area. |
|---|---|---|---|
| | | | *Acres.* |
| Big Hole Battlefield | Montana | June 23, 1910[1] | 5 |

[1] Set aside by Executive order.

The uniform rules and regulations promulgated by the Secretaries of the Interior, Agriculture, and War, under date of December 28, 1906, to carry into effect the general provisions of the act for the preservation of American antiquities provides (par. 3) that—

> Permits for the excavation of ruins, the excavation of archeological sites, and the gathering of objects of antiquity will be granted, by the respective secretaries having jurisdiction, to reputable museums, universities, colleges, or other recognized scientific or educational institutions, or to their duly authorized agents.

During the year three permits were granted for the examination, excavation, and gathering of specimens in the San Joaquin Valley in the contiguous State and Territory of Utah and Arizona, the ruins of Puye on the Santa Clara Indian Reservation in New Mexico, and the prehistoric ruins on public lands in the northern part of Yavapai County, Ariz., adjacent to the Coconino National Forest. Permits were granted for the gathering of samples of silicified wood from the Petrified Forest National Monument to Dr. Victor Goldsmith, for the use of the museum of the University of Heidelberg, Germany, and to the American Museum of National History, New York City. One application was denied. A number of the largest archeological institutions in the country have claimed that the uniform regulations of December 28, 1906, should be amended so as to remove certain restrictions which they regard as oppressive. This matter is still under consideration in the department.

## MUIR WOODS NATIONAL MONUMENT.

On December 31, 1907, the Secretary of the Interior, for and on behalf of the United States, accepted from William Kent and his wife, Elizabeth Thatcher Kent, of Chicago, Ill., in accordance with the act of Congress approved June 8, 1906, entitled "An act for the preservation of American antiquities," a deed conveying to the United States the following-described land, situate in Marin County, Cal.:

Beginning at a stake, A. 7, driven in the center of the road in Redwood Cañon and located by the following courses and distances from the point of commencement of the tract of land, which was conveyed by the Tamalpais Land and Water Company to William Kent by a deed dated August 29th, 1905, and recorded in the office of the county recorder of Marin County, California, Book 95 of Deeds at page 58, to wit: North eighteen degrees thirty-two minutes, east two hundred thirty-two and sixty-four hundredths feet, north sixty-six degrees thirty minutes, west one hundred sixty-seven and thirty-four hundredths feet, north eighty-six degrees twenty-five minutes, west ninety-eight and sixty-two hundredths feet, north seventy degrees no minutes, west two hundred forty-one and seven hundredths feet, north fifty-seven degrees twenty-nine minutes, west one hundred seventy-eight and three-hundredths feet, north forty-six degrees twenty-two minutes, west two hundred thirty-five and thirty-nine hundredths feet, and north twenty-four degrees twenty-five minutes, west two hundred twenty-five and fifty-six hundredths feet; thence from said stake, A. 7, the point of beginning, south fifty-four degrees nineteen minutes, west fourteen hundred eighty-two and seven-tenths feet to Station A. 8, from which Station 4 of the survey of the tract of land conveyed to William Kent as aforesaid bears south fifty-four degrees nineteen minutes, west three hundred ten feet distant; thence from said Station A. 8 north forty-seven degrees thirty minutes, west twenty-six hundred eighty feet; thence due west six hundred fifty and eight-tenths feet; thence north fifty-two degrees thirty minutes, west eleven hundred feet; thence north nineteen degrees forty-five minutes, west ten hundred fifty-eight and four-tenths feet to Station A. 12, from which Station 16 of the survey of the tract of land conveyed to William Kent as aforesaid bears south eighty-three degrees forty-two minutes, west three hundred ten feet distant; thence north eighty-three degrees forty-two minutes, east thirty-one hundred nine and two-tenths feet; thence north fifty-five degrees

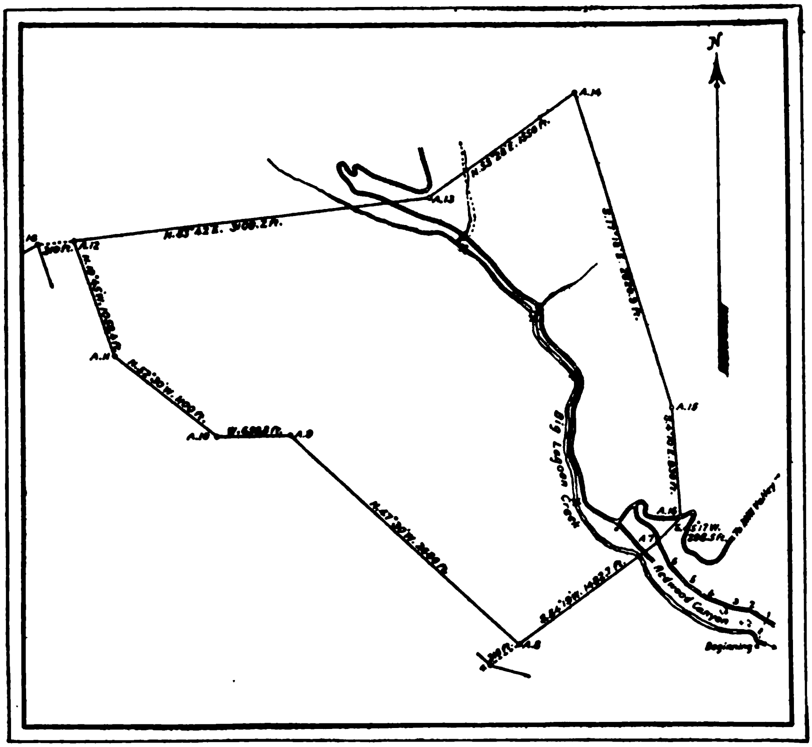


FIG. 3.—Muir Woods National Monument, Cal., in T. 1 N., R. 6 W., Mount Diablo meridian; created January 9, 1908.

twenty-eight minutes, east fifteen hundred fifty feet to an iron bolt, three-quarters of an inch in diameter and thirty inches long, Station 14; thence south seventeen degrees eighteen minutes, east twenty-eight hundred twenty and nine-tenths feet; thence south four degrees ten minutes, east nine hundred thirty feet to a stake, A. 16, driven in the center of a graded road; and thence south forty-five degrees seventeen minutes, west two hundred ninety-eight and five-tenths feet to said stake A. 7, the place of beginning. Containing an area of two hundred ninety-five acres, a little more or less.

On January 9, 1908, the President, by virtue of the power and authority vested in him by section 2 of said act, declared, proclaimed, and set apart the lands described as a "national monument to be known and recognized as Muir Woods National Monument." The Secretary of the Interior had, prior to the date last mentioned, withdrawn the lands from entry or sale.

On September 10, 1908, the department prescribed regulations as follows for the government and protection of said monument:

The following rules and regulations for the government of the Muir Woods National Monument, in the State of California, set aside under the provisions of the act of Congress approved June 8, 1906, are hereby established and made public, pursuant to the authority conferred by said act:

1. Fires are absolutely prohibited.
2. No firearms allowed.
3. No fishing permitted.
4. Flowers, ferns, or shrubs must not be picked, nor may any damage be done to the trees.
5. Vehicles and horses may be left only at the places designated for this purpose.
6. Lunches may be eaten only at the spots marked out for such use, and all refuse and litter must be placed in the receptacles provided.
7. Pollution of the water in any manner is prohibited. It must be kept clean enough for drinking purposes.
8. No drinking saloon or barroom will be permitted.
9. Persons rendering themselves obnoxious by disorderly conduct or bad behavior, or who may violate any of the foregoing rules, will be summarily removed.

While the sundry civil act approved May 27, 1908 (35 Stat., 317), was pending before Congress attention was called to the fact that no provision was made for the salaries of custodians or for other protection of national monuments, as recommended in the estimates for these services, and that the department would be embarrassed in its efforts to protect monuments from vandalism and unauthorized exploration and spoliation because of a lack of funds. The department had recommended an appropriation of $5,000 for these purposes. Three thousand dollars had been appropriated the previous year, but because of deficient wording of the act, was not made available. However, on July 11, 1910, Andrew Lind, of California, was appointed custodian of the Muir Woods National Monument, at a salary of $900 per annum, payable from the appropriation "Protection of public lands and timber."

These lands consist of one of the most noted redwood groves in the State of California, and were held in private ownership by Mr. Kent. The tract is of great scientific interest, contains many redwood trees which have grown to a height of 300 feet and have a diameter at the butt of 18 feet or more. It is located in a direct line about 7 miles from San Francisco, Cal., and is in close proximity to a large and growing suburban population.

The report of Mr. Andrew Lind, the custodian of the reservation, for the year shows that the monument was carefully patroled and the regulations for the government thereof enforced. Obstructions to the roads and trails in the shape of fallen trees have been removed and placed in condition for the accommodation of travel. About 50,000 people visited the monument during the year. Mr. Lind recommends that allotments be made for the renewing and cleaning out of the fire lines, that the main road running through the reservation be put in better condition, and that a suitable building be provided inside the monument for the use of the custodian.

## PETRIFIED FOREST OF ARIZONA.

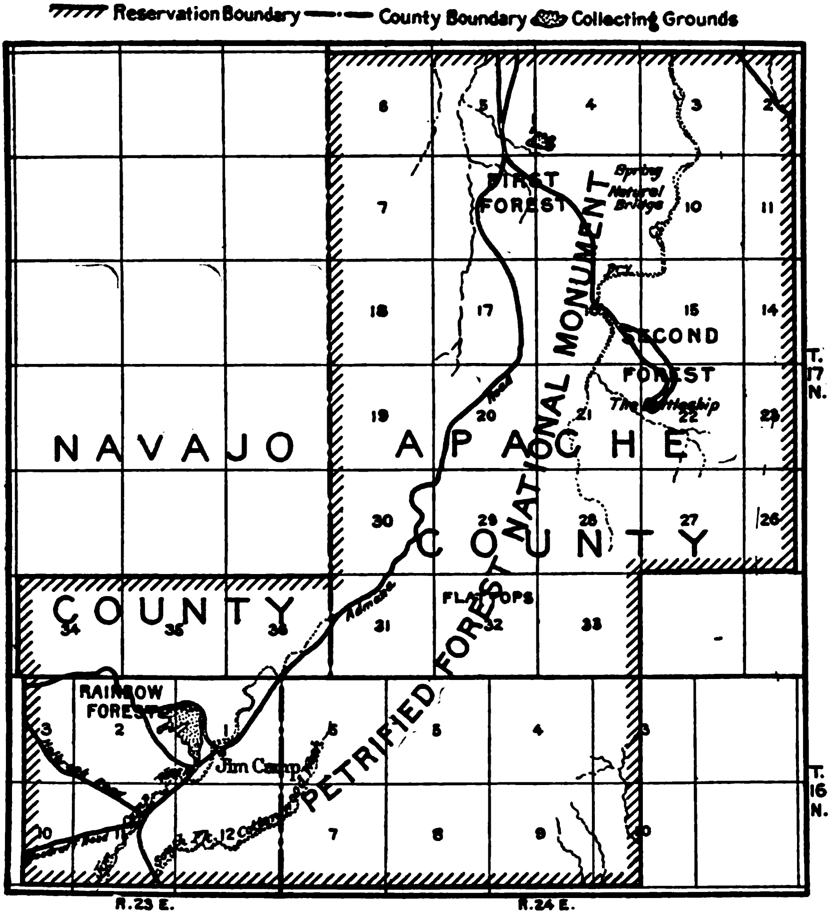


FIG. 4.—Petrified Forest National Monument, Ariz., embracing secs. 1, 2, 11, and 12 and E. ½ secs. 3 and 10, T. 16 N., R. 23 E.; secs. 4 to 9 and W. ½ secs. 3 and 10, T. 16 N., R. 24 E.; secs. 34, 35, 36, T. 17 N., R. 23 E.; sec. 3 to 10, 15 to 22, 27 to 33, and W. ½ secs. 2, 11, 14, 23, 26, T. 17 N., R. 24 E., Gila and Salt River meridian, containing 40.04 acres, set aside by proclamation of the President July 31, 1911.

The Petrified Forest of Arizona lies in the area between the Little Colorado River and the Rio Puerco, 15 miles east of their junction and 6 miles south of Adamana, a station on the Santa Fe Pacific Railroad, from which place it is accessible by horse or vehicle. This area is of great interest because of the abundance of petrified coniferous trees, as well as its scenic features. The trees lie scattered about in great profusion; none, however, stands erect in its original place of growth, as do many of the petrified trees in the Yellowstone National Park. The trees probably at one time grew beside an inland sea; after falling they became waterlogged, and during decomposition the cell structure of the wood was entirely replaced by silica derived from sandstone in the surrounding land. Over a greater part of the entire area trees lie scattered in all conceivable positions and in fragments of all sizes. Perhaps the most prominent of all the scenic features of the region is the well-known Natural Bridge, consisting of a great petrified trunk lying across a canyon 45 feet in width and forming a footbridge over which anyone may easily pass.

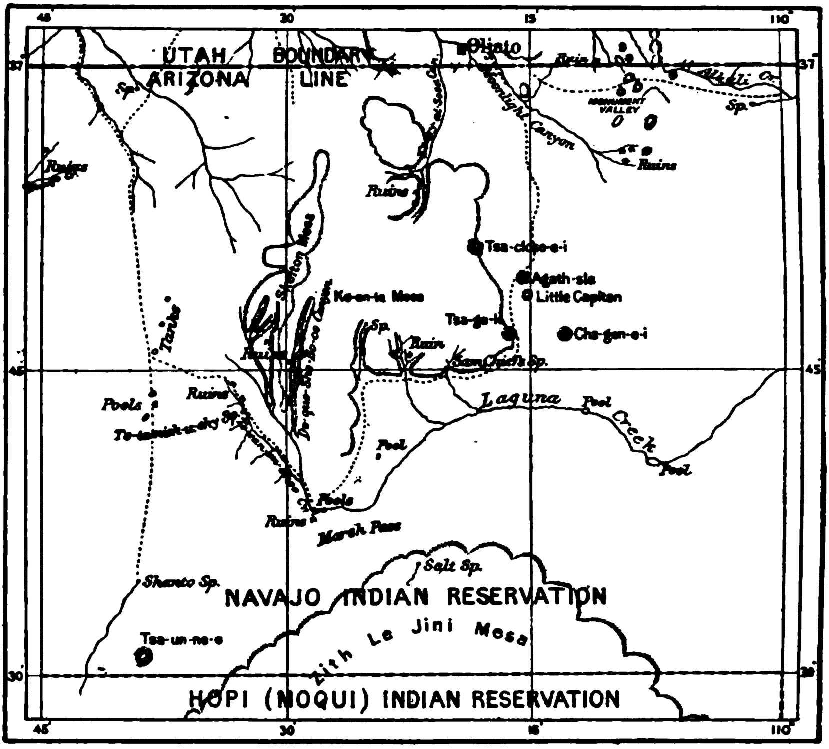


FIG. 5.—Navajo National Monument, Ariz., embracing all cliff-dwelling and pueblo ruins between the parallel of latitude 36° 30′ and 37° north and longitude 110° and 110° 45′ west from Greenwich, with 40 acres of land in square form around each of said ruins; created March 20, 1909.

Prof. Lester F. Ward, of the Geological Survey, has stated that "there is no other petrified forest in which the wood assumes so many varied and interesting forms and colors, and it is these that present the chief attraction for the general public. The state of mineralization in which much of this wood exists almost places them among the gems or precious stones. Not only are chalcedony, opals, and agates found among them, but many approach the condition of jasper and onyx. The degree of hardness attained by them is such that they are said to make an excellent quality of emery."

Dr. Walter Hough, of the Smithsonian Institution, who visited this monument, states that "in the celebrated Petrified Forest, which is some 18 miles from Holbrook, Ariz., on the picturesque Santa Fe

Railroad, there are ruins of several ancient Indian villages. These villages are small, in some cases having merely a few houses, but what gives them a peculiar interest is that they were built of logs of beautiful fossil wood. * * * The prehistoric dwellers of the land selected cylinders of uniform size, which were seemingly determined by the carrying strength of a man. It is probable that prehistoric builders never chose more beautiful stones for the construction of their habitations than the trunks of the trees which flourished ages before man appeared on the earth.

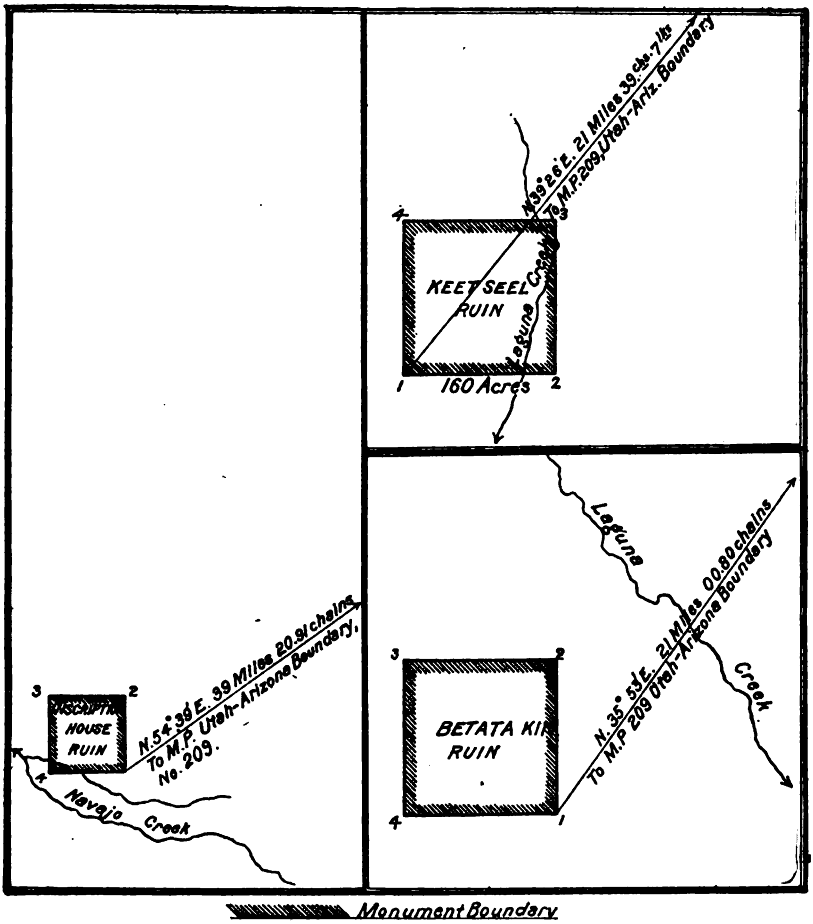

N.39°26'E. 21 Miles 39 chs. 7 lks To M.P. 209 Utah-Ariz. Boundary
4
3
KEET SEEL RUIN
Laguna Creek
1
160 Acres
2
Laguna
Creek
N.35° 53'E. 21 Miles 00.80 chains To M.P. 209 Utah-Arizona Boundary
3
2
BETATA KIN RUIN
4
1
3
2
INSCRIPTION HOUSE RUIN
4
N.54°39'E. 39 Miles 20.91 chains To M.P. Utah-Arizona Boundary, No. 209.
Navajo Creek
Monument Boundary

FIG. 6.—Navajo National Monument, Ariz., containing 360 acres, embracing the Keet Seel and Betata Kin ruins, located in two small tracts of 160 acres each, along Laguna Creek, and Inscription House ruins, on Navajo Creek, in a 40-acre tract, all within the Navajo Indian Reservation.

"This wood agate also furnished material for stone hammers, arrowheads, and knives, which are often found in ruins hundreds of miles from the forest."

## NAVAJO NATIONAL MONUMENT.

This monument as originally created embraces a large area within the Navajo Indian Reservation, which was reserved tentatively and with a view to a reduction to such small tract or tracts as might be found to contain valuable prehistoric pueblo or cliff dwellings when the extent of same could be determined by examination on the ground and their locus definitely fixed by traverse lines connecting them with some corner of the public surveys. Both of these conditions have now been fulfilled. By proclamation of March 14, 1912, the original reserve was reduced to three small tracts, embracing 360 acres, within which are located, respectively, two most interesting and extensive pueblo cliff-dwelling ruins in a remarkable state of preservation and known as the Betata Kin and Keet Seel, and a third cliff-dwelling ruin called Inscription House, located on Navajo Creek just beyond the western boundary of the present monument and centrally located within and protected by a tract of land containing 40 acres. Inscription House is extraordinary not only because of its remarkable state of preservation, but because upon the walls of its well-preserved rooms were found inscriptions written in Spanish by early explorers and plainly dated 1661.

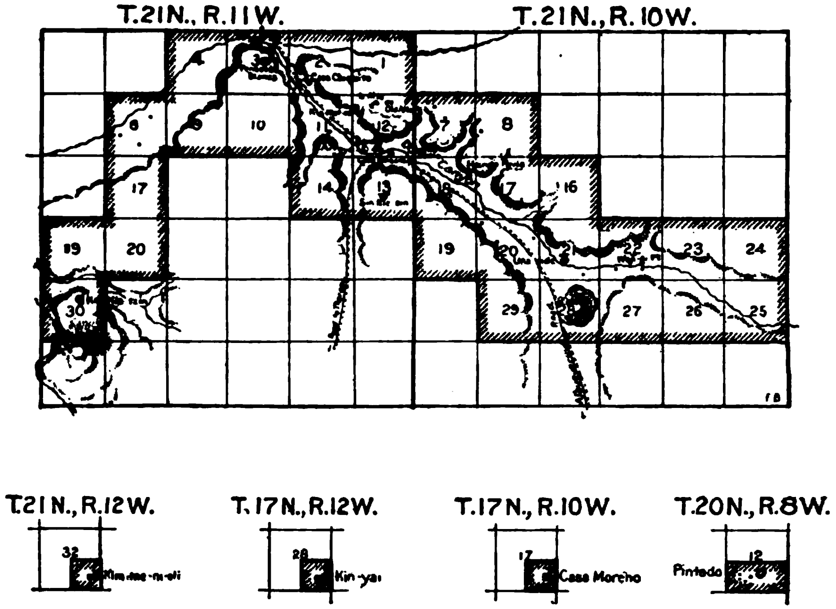


FIG. 7.—Chaco Canyon National Monument, N. Mex., embracing secs. 7 and 8 and 16 to 29, inclusive, T. 21 N., R. 10 W.; secs. 1, 2, 3, 4, and 8 to 14, inclusive, and 17 19, 20, and 30, T. 21 N., R. 11 W.; S. ½ sec. 12, T. 20 N., R. 8 W.; SE. ¼ sec. 32, T. 21 N., R. 12 W.; SE. ¼ sec. 28, T. 17 N., R. 12 W.; SE. ¼ sec. 17, T. 17 N., R. 10 W., New Mexico principal meridian; created March 11, 1907.

The new boundaries of the Navajo National Monument under the latter proclamation are shown in the preceding plat.

## CHACO CANYON NATIONAL MONUMENT.

These remarkable relics of an unknown people embrace numerous communal or pueblo dwellings built of stone, among which is the ruin known as Pueblo Bonito, containing, as it originally stood, 1,200 rooms and being the largest prehistoric ruin yet discovered in the Southwest. Numerous other ruins, containing from fifty to a hundred or more rooms, are scattered along Chaco Canyon and tributaries for a distance of about 14 miles and upon adjacent territory to the east, south, and west of Chaco Canyon many miles farther. The most important of these ruins are as follows: Pueblo Bonito, Chettro Kettle, Arroyo, New Alto, Old Alto, Kin-Klet Soi, Casa Chiquita, Penasco Blanco, Kin-Kla-tzin, Hungo Pavis, Unda Vidie, Weji-gi, Kim-me-ni-oli, Kin-yai, Casa Morena, and Pintado.

### RAINBOW BRIDGE NATIONAL MONUMENT.

This natural bridge is located within the Navajo Indian Reservation, near the southern boundary of Utah, a few miles northwest from Navajo Mountain, a well known peak and landmark, and spans a canyon and small stream which drains the northwestern slopes of this peak. Among the known extraordinary natural bridges of the world, this bridge is unique in that it is not only a symmetrical arch below but presents also a curved surface above, thus presenting, roughly, the character of the rainbow, for which it is named. Its height above the surface of the water is 309 feet and its span is 278 feet.

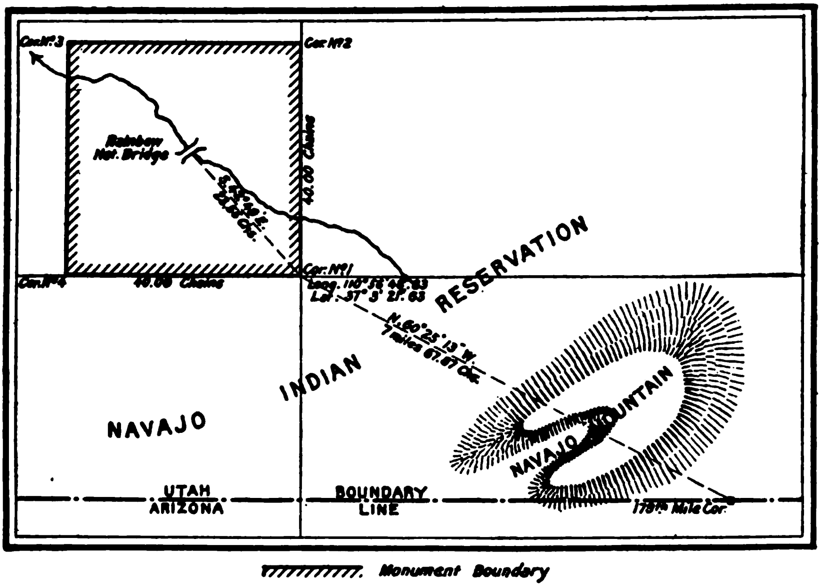


FIG. 8.—Rainbow Bridge National Monument, Utah, embracing 160 acres of land in square form, the southeast corner of which bears from one hundred and seventy-ninth mile corner on the Utah and Arizona boundary N. 60° 25′ 13″ W. 7 miles 67.87 chains distant; created September 25, 1909.

The existence of this natural wonder was first disclosed to William B. Douglass, an examiner of surveys of the General Land Office, on August 14, 1909, by a Piute Indian, called "Mike's-boy," later "Jim," who was employed in connection with the survey of the natural bridges in White Canyon, Utah.

## EL MORRO NATIONAL MONUMENT.

A feature of great historic interest and importance is the so-called El Morro or Inscription Rock, some 35 miles almost due east of Zuni Pueblo in western central New Mexico.

It is not too much to say that no rock formation in the West or perhaps in the world is so well adapted to the purpose for which this table of stone was used—at least history does not record any collection of similar data. Here are records covering two centuries, some of which are the only extant memoranda of the early expeditions and explorations of what is now the southwestern part of the United States. On these smooth walls, usually under some projecting stratum, inscriptions were cut by the early conquerors and explorers, which have made this rock one among the most interesting objects on the continent.

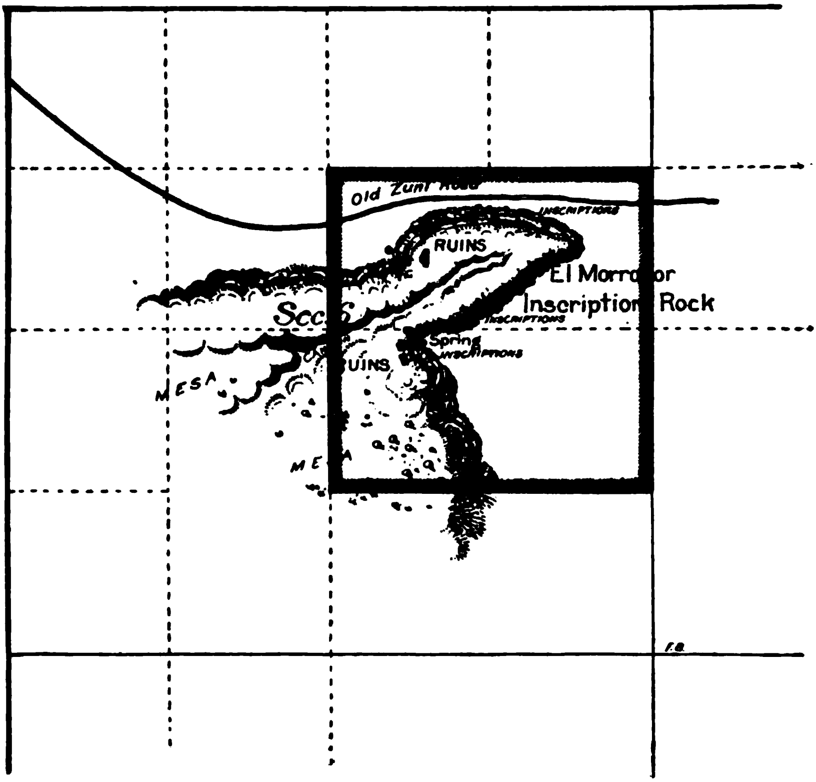


FIG. 9.—El Morro National Monument, N. Mex., embracing the S. ½ NE. ¼ and N. ½ SE. ¼ sec. 6, T. 9 N., R. 14 W., New Mexico meridian; created December 8, 1906.

Here, in this remote and uninhabited region, in the shadows of one of nature's most unique obelisks, wrapped in the profound silence of the desert, with no living thing to break the stillness, it is hard to realize that 300 years ago these same walls echoed the clank of steel harness and coats of mail; that with the implements of Spanish conquest the pathfinders in the New World were carving historical records upon the eternal rock.

Locally Inscription Rock and El Morro are known as separate and distinct monumental rocks. The latter, translated The Castle, is the rock standing out in bold relief to the east, while Inscription Rock is the name applied to the formation to the west, which is a part of the mesa. On the south side in the angle formed by the two, one extending east and the other south, is a great chamber or cavern, a natural amphitheater where secure refuge from storm or human foe could easily be secured. It is here, too, that the only spring within many miles wells up as if to make the natural fortification doubly secure. Upon these walls are many of the best preserved Spanish inscriptions, although there are quite a number 200 feet east, under the shadows of a stately pine tree and on the north side of El Morro. Most of them are as plain and apparently as legible as the day they were written; especially is this true of the older ones, carved during the sixteenth and seventeenth centuries.

The existence of extensive, prehistoric ruins on the very summit of Inscription Rock is another feature of interest. On the top of the rock a deep cleft or canyon divides the western end of the formation. On each of these arms is the remnant of large communal houses or pueblos. Some of the walls are yet standing and the ground plans of the structures are well defined. That on the south arm, and almost overhanging the cavern and spring, is approximately 200 by 150 feet; some of the buildings must have been more than one story in height. The remarkable natural defenses of the site and the existence of the spring doubtless induced the builders to select this odd location. At some distant day it may be desirable to excavate these ruins and thus add to this historic spot attractions for the scientist as well as the general public who are interested in scenic and natural curiosities.

## LEWIS AND CLARK CAVERN NATIONAL MONUMENT.

The feature of this monument is a limestone cavern of great scientific interest, because of its length and because of the number of large vaulted chambers it contains. It is of historic interest, also, because it overlooks for a distance or more than 50 miles the trail of Lewis and Clark along the Jefferson River, named by them. The vaults of the cavern are magnificently decorated with stalactites and stalagmite formations of great variety in size, form, and color, the equal of, if not rivaling, the similar formations in the well-known Luray caves in Virginia.

The cavern is located about 1 mile northeasterly from Limespur, a post office in Jefferson County, and a station on the Northern Pacific Railroad. Its two entrances, which are about 100 yards apart, are upon the walls of a deep canyon about 500 feet below the rim, and the cavern extends back therefrom approximately half a mile. The proclamation establishing this monument is as follows:

Whereas the unsurveyed tract of land containing an extraordinary limestone cavern and embracing one hundred and sixty acres, situated in township one north, range two west of the Montana principal meridian, Montana, and which was created the Lewis and Clark Cavern National Monument by proclamation dated the 11th day of May, 1908, has recently been definitely located by an official survey thereof, made under the direction of the Commissioner of the General Land Office, and such survey having determined that the tract in question lies wholly within the limits of the grant of the Northern Pacific Railway Company but has not yet been patented to that company;

And whereas, by its quitclaim deed the said Northern Pacific Railway Company relinquished unto the United States all its right, title, and interest to lot twelve, section seventeen, township one north, range two west of the Montana principal meridian, Montana, the same being the original tract proclaimed a national monument, for the purpose of maintaining thereon the said Lewis and Clark Cavern National Monument, under the condition that the instrument of relinquishment shall become void and the premises immediately revert to the grantor should the monument no longer be maintained.

Now, therefore, I, William H. Taft, President of the United States of America, by virtue of the power in me vested by section two of the act of Congress approved June 8, 1906, entitled "An act for the preservation of American antiquities," do hereby set aside and confirm as the Lewis and Clark Cavern National Monument the said tract, embracing one hundred and sixty acres of land, at and surrounding the limestone cavern in section seventeen, township one north, range two west, Montana, subject to the conditions set forth in the relinquishment and quitclaim deed No. 18129E, dated February 14, 1911, of the Northern Pacific Railway Company, the said tract being in square form and designated as lot twelve in the survey and deed, with side lines running north and south and all sides equidistant from the main entrance of the said cavern, the center of said entrance bearing north forty-nine degrees, forty-two minutes west, fifty-three and thirteen hundredths chains distant from the corner to sections sixteen, seventeen, twenty, and twenty-one, as shown upon the diagram hereto attached and made a part hereof.

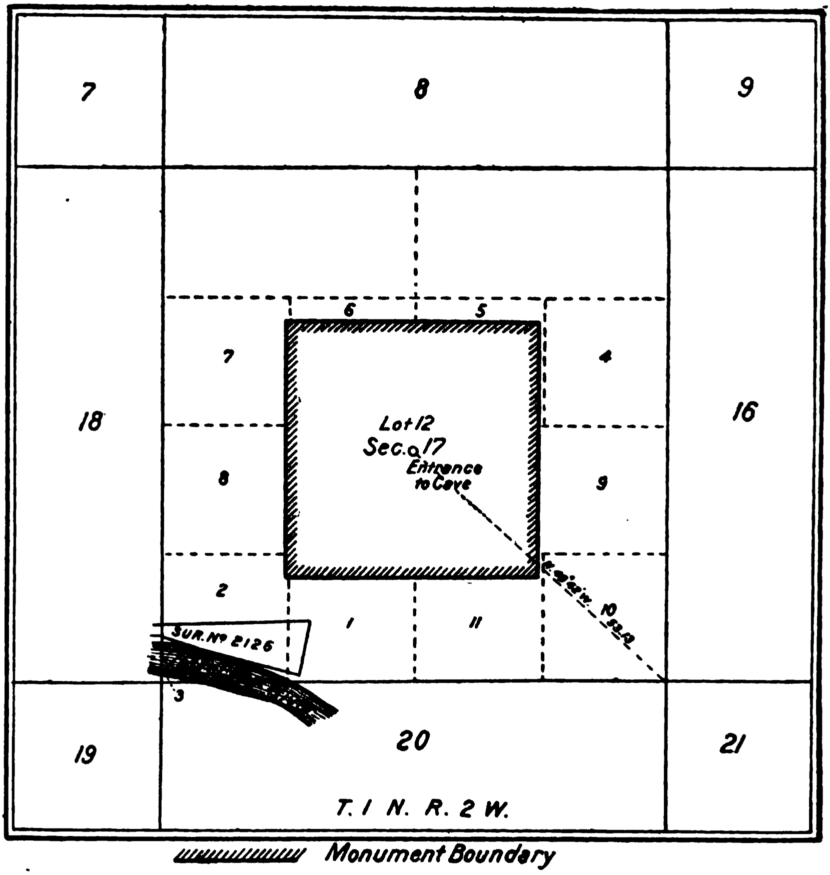


FIG. 10.—Lewis and Clark Cavern National Monument, Mont., embracing lot 12, sec. 17, T. 1 N., R. 2 W., Montana principal meridian; created May 11, 1908.

**Warning is hereby expressly given to all persons not to appropriate, injure, or destroy any of the natural formations in the cavern hereby declared to be national monument, nor to locate or settle upon any of the lands reserved and made a part of said monument by this proclamation.**

**In witness whereof, I have hereunto set my hand and caused the seal of the United States to be affixed.**

**Done at the city of Washington this sixteenth day of May, in the year [SEAL.] of our Lord one thousand nine hundred and eleven, and of the independence of the United States the one hundred and thirty-fifth.**

## TUMACACORI NATIONAL MONUMENT.

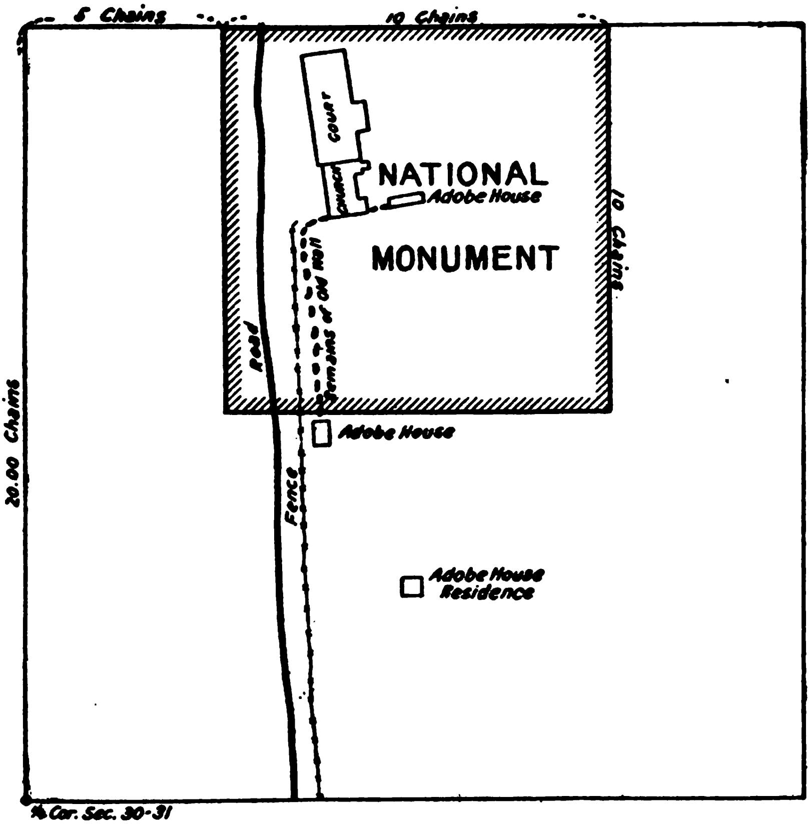


FIG. 11.—**Tumacacori National Monument, Ariz., embracing the E. ½ NW. ¼ SW. ¼ SE. ¼ and the W. ½ NE. ¼ SW. ¼ SE. ¼, sec. 30, T. 21 S., R. 13 E., Gila and Salt River meridian; created September 15, 1908.**

This monument embraces 10 acres of land relinquished to the United States by a homestead entryman for the purposes specified in the act of June 8, 1906. Upon the tract is located a very ancient Spanish mission ruin, erected probably, as appears from the reports, in the latter part of the sixteenth century. The church is in a remarkable state of preservation, owing to the fact that it was erected out of burned bricks and cement mortar.

## MONTEZUMA CASTLE NATIONAL MONUMENT.

This structure is of very great interest, not only because of its picturesqueness, but for ethnological and other scientific reasons. It is strictly a cliff dwelling, with the added importance that it is also a communal house. Although very small as compared with the great ruins of Chaco Canyon, Canyon de Chelley, Mesa Verde, the Mancos, and other localities of the Southwest, it is so unique in location and structural design, and so perfectly preserved, that it may be said to have no equal in the United States.

The character of the material used in the Verde cliff ruins, adobe, rubble, and a soft calcareous stone, rendered the progress of disintegration and ruin somewhat rapid, though many centuries must have elapsed since the passing of the race. The Mojave Apache Indians, who occupied the valley at the advent of the white men, have no tradition respecting the existence of the people who formerly occupied this region. Montezuma's Castle, it is stated, is the only single perfect specimen and type of the architectural skill of the prehistoric cliff dwellers of this valley.

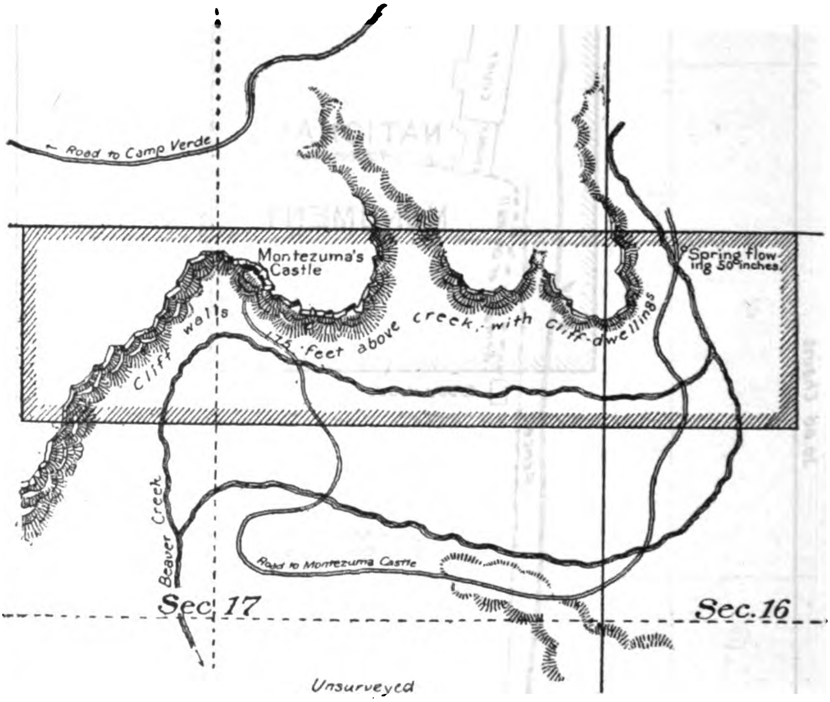


FIG. 12.—Montezuma Castle National Monument, Ariz., embracing the NW. ¼ NW. ¼ sec. 16, the N. ½ NE. ¼ and NE. ¼ NW. ¼ sec. 17, T. 14 N., R. 5 E., Gila and Salt River meridian; created December 8, 1906.

## NATURAL BRIDGES NATIONAL MONUMENT.

This tract of land was first created a national monument on April 16, 1908.

A second proclamation, issued by the President September 25, 1909, includes, besides the three bridges originally reserved, a much more extended territory, but within which, along the walls of the canyons in the vicinity of the bridges, are found many prehistoric ruins of cavern and cliff dwellings. There are also two cavern springs containing some prehistoric ruins, which are located approximately 13 and 19 miles southeast of the bridges, respectively. These cavern springs are included within the Natural Bridges Monument. They are located upon the ancient and only trail to the bridges from the south, and are important way stations in the desert surrounding this monument.

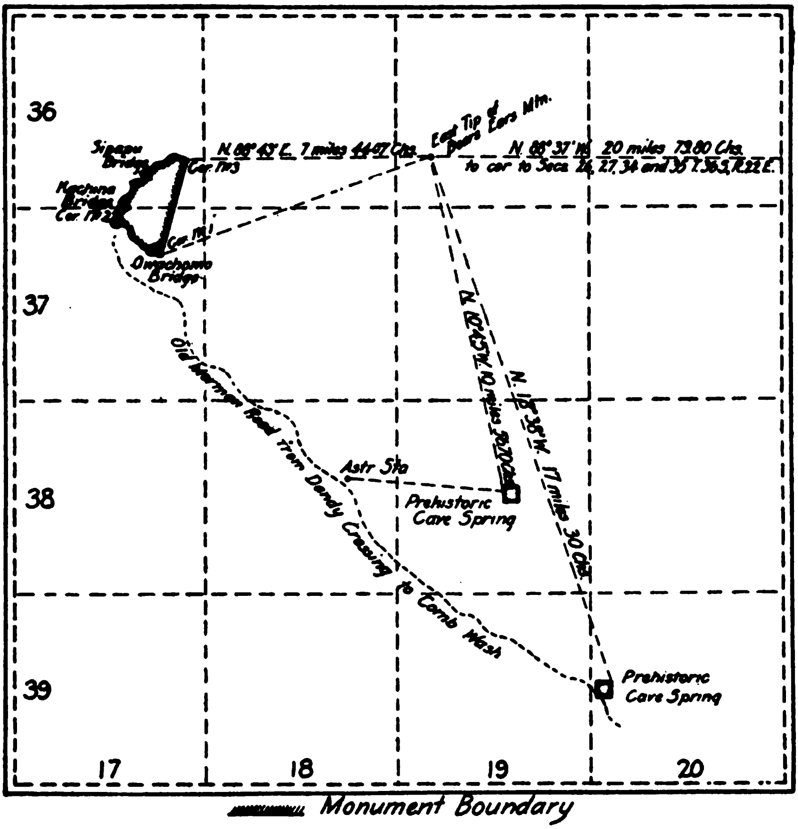

36
37
38
39
17
18
19
20
Sipapu Bridge
Kachina Bridge Cor. T.12
Cor. T.13
Cor. M.1
Owachomo Bridge
N. 88° 43' E. 7 miles 44.07 Chs.
East Tip of Bears Ears Mtn.
N. 88° 37' W. 20 miles 73.80 Chs. to cor. to Secs. 26, 27, 34 and 35 T. 36 S., R. 22 E.
Old Mormon Road from Dandy Crossing to Comb Wash
Astr Sta
Prehistoric Cave Spring
N. 15° 35' W. 17 miles 30 Chs.
Prehistoric Cave Spring
Monument Boundary

FIG. 13.—Natural Bridges National Monument, Utah, embracing a subtriangular tract in unsurveyed Tps. 36 and 37 S., R. 17 E., and two smaller tracts, one each in T. 38 S., R. 19 E., and T. 39 S., R. 20 E., Salt Lake meridian; created September 25, 1909.

## GRAN QUIVIRA NATIONAL MONUMENT.

The Gran Quivira has long been recognized as one of the most important of the earliest Spanish church or mission ruins in the Southwest. Near by are numerous Indian pueblo ruins, occupying an area many acres in extent, which also, with sufficient land to protect them, was reserved. The outside dimensions of the church ruins, which is in the form of a short-arm cross, are about 48 by 140 feet, and its walls are from 4 to 6 feet thick and from 12 to 20 feet high.

The Gran Quivira National Monument is located 1½ miles outside of the exterior boundaries of the Manzano National Forest, and is remote from the headquarters of any officer of this department.

## MUKUNTUWEAP NATIONAL MONUMENT.

The Mukuntuweap National Monument, Utah, embraces the magnificent gorge of Zion Creek, called the Mukuntuweap Canyon by the Powell Topographic Survey of southwestern Utah, Kanab sheet, and the same is of the greatest scientific interest. The canyon walls are smooth, vertical sandstone precipices, from 800 to 2,000 feet deep. These walls are unscalable within the limits of the boundaries of the reserve, except at one point about 4 miles from the southern and 6 miles from the northern extremity. The north fork of the Rio Virgin passes through the canyon, and it is stated that the views into the canyon from its rim are exceeded in beauty and grandeur only by the similar views into the Grand Canyon of the Colorado.

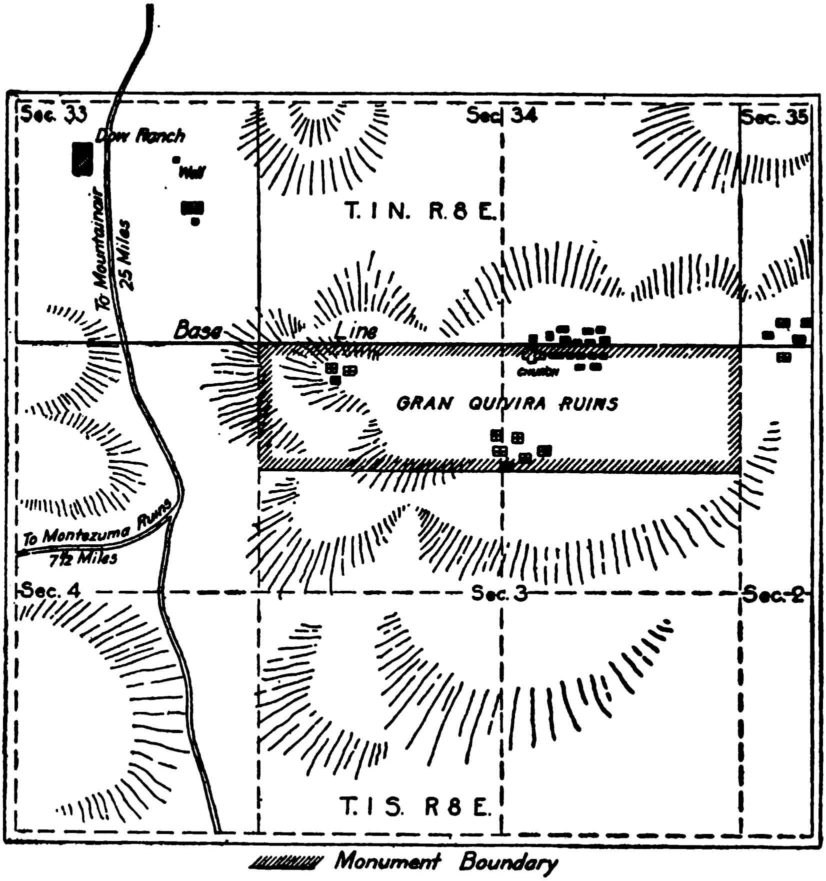


FIG. 14.—Gran Quivira National Monument, N. Mex., embracing unsurveyed N. ½ N. ½ sec. 3, T. 1 S., R. 8 E., New Mexico principal meridian; created November 1, 1909.

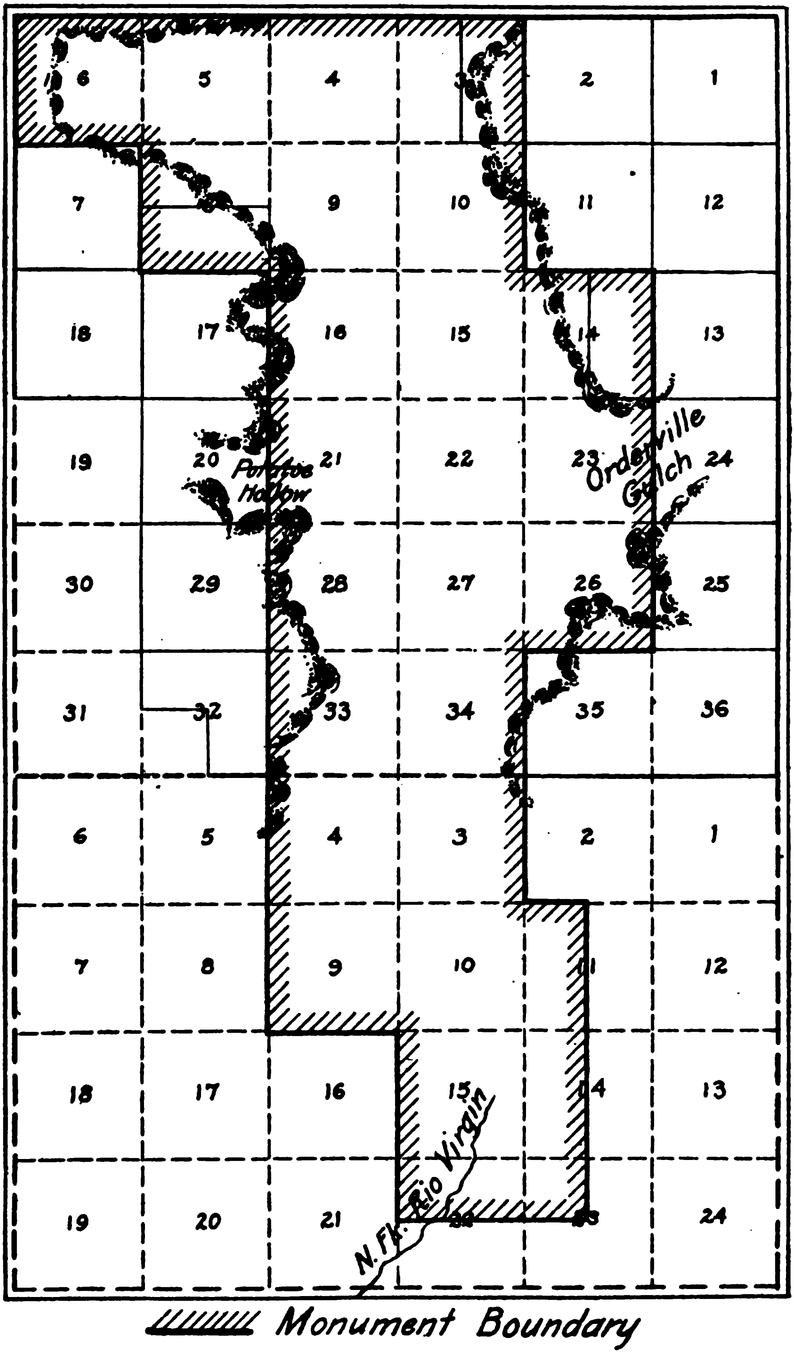


FIG. 15.—Mukuntuweap National Monument, Utah, embracing secs. 3, 4, 5, 6, 8, 9, 10, 14, 15, 16, 21, 22, 23, 26, 27, 28, 33, and 34, T. 40 S., R. 10 W., and all of the Mukuntuweap Canyon in T. 41 S., R. 10 W., Salt Lake meridian; created July 31, 1909.

At intervals along the west wall of the canyon are water courses which cross the rim and plunge into the gorge in waterfalls 800 to 2,000 feet high.

## SHOSHONE CAVERN NATIONAL MONUMENT.

The Shoshone Cavern National Monument embraces 210 acres of rough, mountainous land. The cavern entrance is located upon the north face of Cedar Mountain, about 3 miles east of the great Shoshone Dam in Big Horn County, Wyo. From its entrance the cavern runs in a southwesterly direction for more than 800 feet, if measured in a direct line. The route which must be traveled to

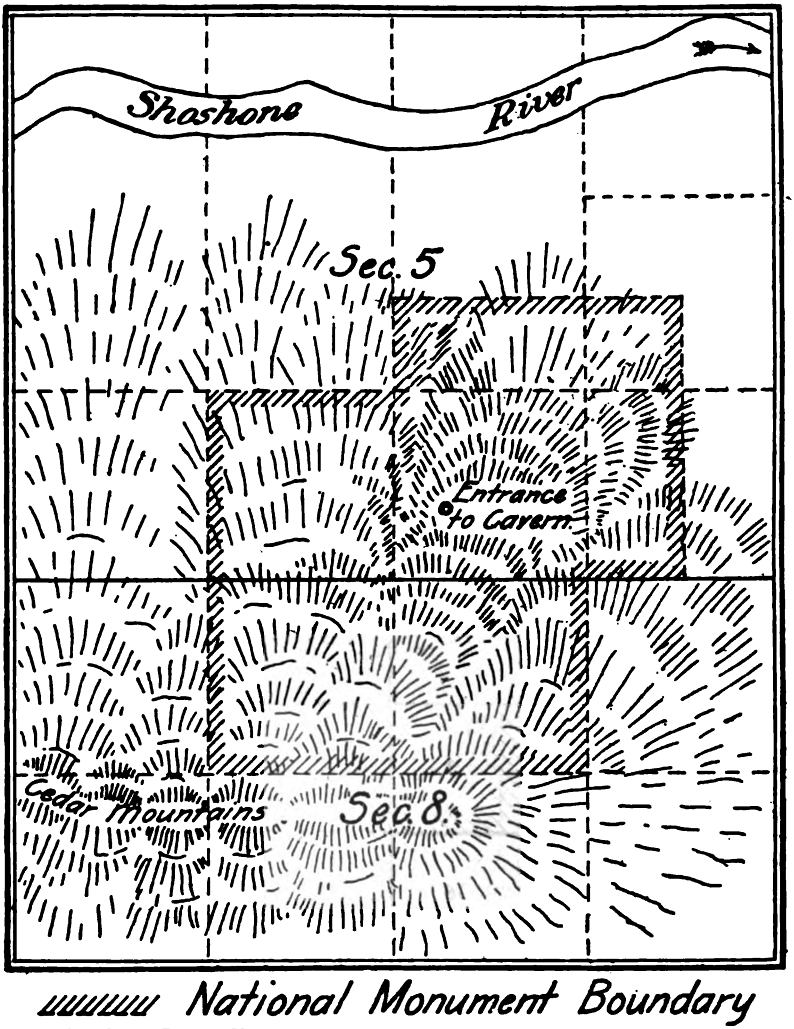


FIG. 16.—Shoshone Cavern National Monument, Wyo., embracing the SW. ¼ SE. ¼, W. ½ SE. ¼ SE. ¼, SW. ¼ NE. ¼ SE. ¼, S. ½ NW. ¼ SE. ¼; and SE. ¼ SW. ¼, sec. 5; the NW. ¼ NE. ¼ and NE. ¼ NW. ¼ sec. 8, T. 52 N., R. 102 W., sixth principal meridian; created September 21, 1909.

reach this depth within the mountain, however, is so winding and irregular that at least a mile is passed before the terminus is reached. There are en route many dark pits and precipices of unknown depth and therefore of a special interest. The various chambers and passages are beautifully decorated with a sparkling crust of limestone crystals and from the roof hang myriads of stalactites.

## SITKA NATIONAL MONUMENT, ALASKA.

This monument reservation, created under the act of June 8, 1906, embraces about 57 acres of comparatively level gravel plain formed by sea wash and by the deposits of Indian River, which flows through the tract. Upon this ground was located formerly the village of a warlike tribe—the Kik-Siti Indians—who, in 1802, massacred the Russians in old Sitka and thereafter fortified themselves and defended their village against the Russians under Baranoff and Lisianski. Here also are the graves of a Russian midshipman and six sailors, who were killed in a decisive battle in 1804; a celebrated "witch tree" of the natives; and 16 totem poles, several of which are examples of the best work of the savage genealogists of the Alaska clans, stand sentrylike along the beach.

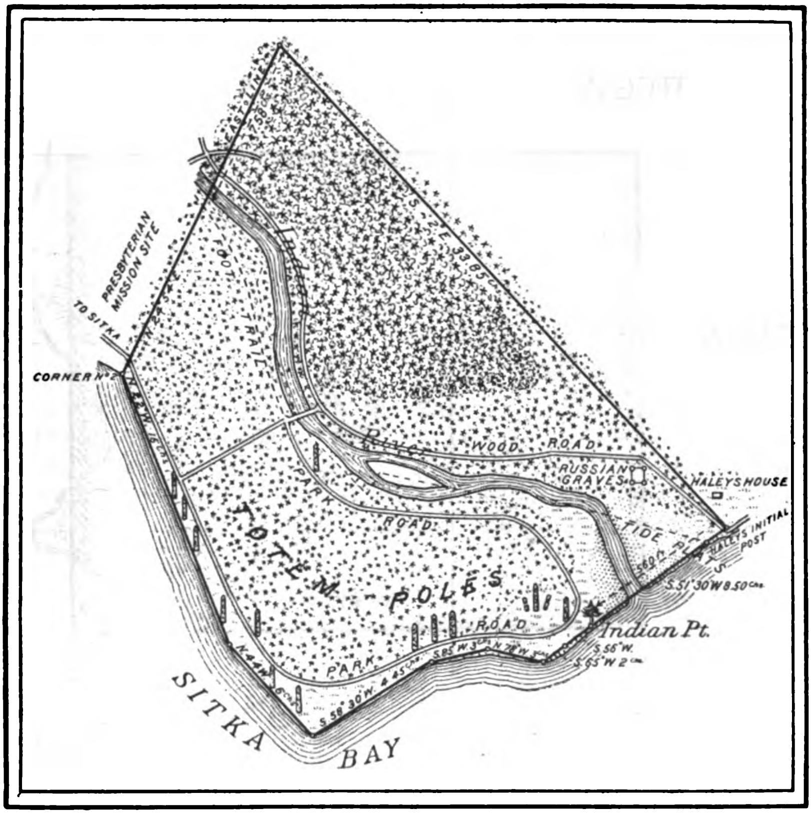


FIG. 17.—Sitka National Monument, Alaska, embracing a tract of land which includes the mouth of Indian River and adjacent territory near Sitka; created March 23, 1910.

## DEVILS TOWER NATIONAL MONUMENT.

This extraordinary, natural monument has been known and utilized, doubtless, from time immemorial by the aborigines of the plains and mountains, for the American Indian of the last century was found to be directing his course to and from the hunt and foray by reference to this lofty pile. In their turn the white pioneers of civilization in their explorations of the great Northwest which began with the expedition of the Verendryes, pathfinders of the French colonies of Canada, in 1742, utilized the tower as a landmark, and still later the military expeditions into the Sioux and Crow Indian country during the Indian wars of the last century carried on operations within sight of the Devils Tower or directed their march by the aid of its ever-present beacon, for the tower is visible in some directions in that practically cloudless region for nearly 100 miles.

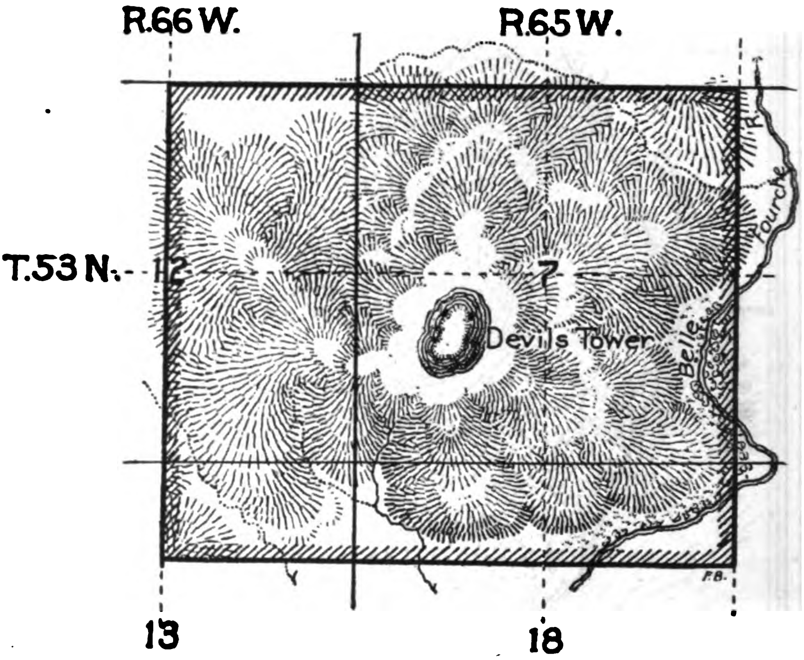


FIG. 18.—Devils Tower National Monument, Wyo., embracing sec. 7 and the N. ½ NE. ¼, the NE. ¼ NW. ¼, and lot No. 1, sec. 18, T. 53 N., R. 65 W.; the E. ½ sec. 12 and the N. ½ NE. ¼ sec. 13, T. 53 N., R. 66 W., sixth principal meridian; created September 24, 1906.

## PINNACLES NATIONAL MONUMENT.

There are two groups of the so-called Pinnacles Rocks, known locally as the Big Pinnacles and the Little Pinnacles. The general characteristics of the two groups are similar. Each covers an area of about 160 acres, very irregular in outline.

The name is derived from the spirelike formations rising from 600 to 1,000 feet from the floor of the canyon, forming a landmark visible many miles in every direction. Many of the rocks are so precipitous that they can not be scaled. A series of caves, opening one into the other, lie under each of the groups of rock. These caves vary greatly in size, one in particular, known as the Banquet Hall, being about 100 feet square with a ceiling 30 feet high. The caves are entered through narrow canyons, with perpendicular rock walls and overhanging bowlders. One huge stone, called the Temple Rock, is almost cubical in form. It stands alone in the bottom of the canyon and its walls rise perpendicularly to a height of over 200 feet. There are also several specimens of "balancing rocks" in each of the groups.

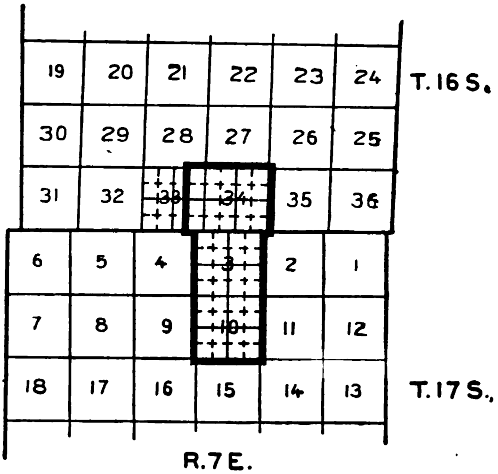


FIG. 19.—Pinnacles National Monument, Cal.; created January 16, 1908.

## COLORADO NATIONAL MONUMENT.

This area was set aside as a national monument by the President's proclamation of May 24, 1911, and is the latest monument to be created.

It is situated near Grand Junction, Colo., and the site is in a picturesque canyon, which has long been an attractive feature of that portion of the State. The formation is similar to that of the Garden of the Gods at Colorado Springs, Colo., only much more beautiful and picturesque. With the exception of the Grand Canyon of the Colorado it exhibits probably as highly colored, magnificent, and impressive examples of erosion, particularly of lofty monoliths, as may be found anywhere in the West. These monoliths are located in several contributary canyons. Some of them are of gigantic size, one being over 400 feet high, almost circular in cross section, and 100 feet in diameter at base.

## CINDER CONE NATIONAL MONUMENT.

The Cinder Cone National Monument was created by proclamation dated May 6, 1907. It is situated within the Lassen Peak National

Forest, and with the adjacent area, embracing a lava field and Snag Lake and Lake Bidwell, is of scientific interest as illustrative of volcanic activity, and is of special importance in tracing the history of the volcanic phenomena of that vicinity.

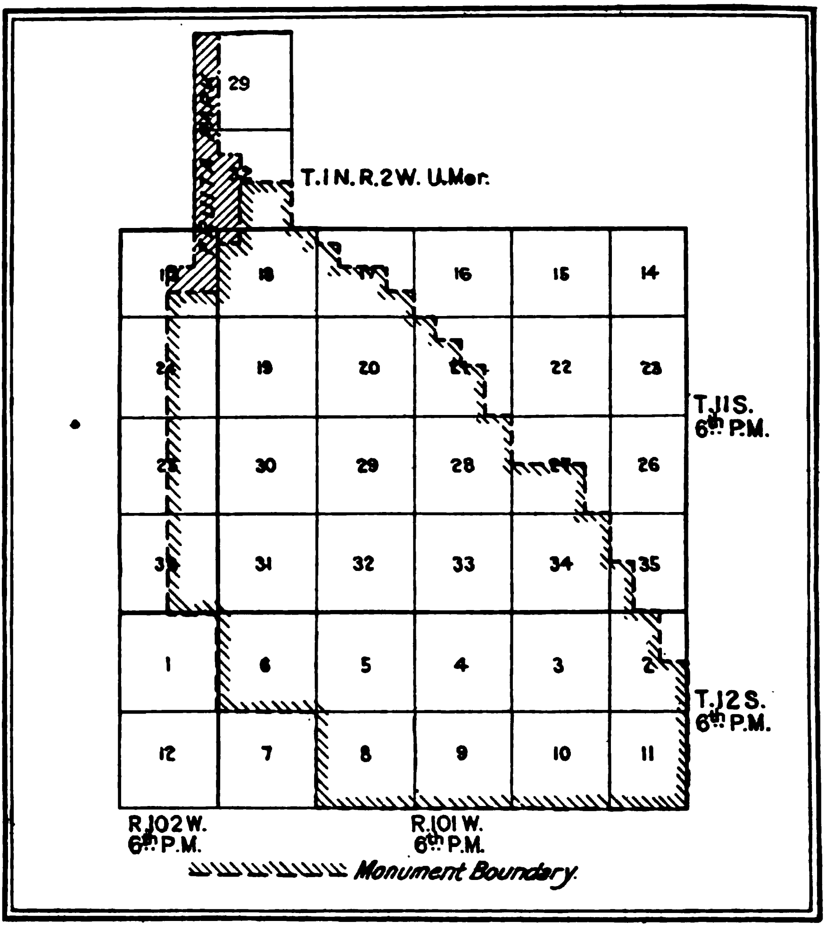


FIG. 20.—Colorado National Monument, Colo., embracing parts of Tps. 11 and 12 S., Rs. 101 and 102 W. of the sixth principal meridian, and part of sec. 32, T. 1 N., R. 2 W. of the Ute meridian, Colo., containing 13,883.06 acres.

## LASSEN PEAK NATIONAL MONUMENT.

The Lassen Peak National Monument was created by proclamation dated May 6, 1907. It is situated within the Lassen Peak National Forest and marks the southern terminus of the long line of extinct volcanoes in the Cascade Range, from which one of the greatest volcanic fields in the world extends, and is of special importance in tracing the history of the volcanic phenomena of that vicinity.

## GILA CLIFF-DWELLINGS NATIONAL MONUMENT.

The Gila Cliff-Dwellings National Monument was created by proclamation dated November 16, 1907. These cliff-dweller ruins are neither very large nor very important, but are located in a district in which few prehistoric ruins are found.

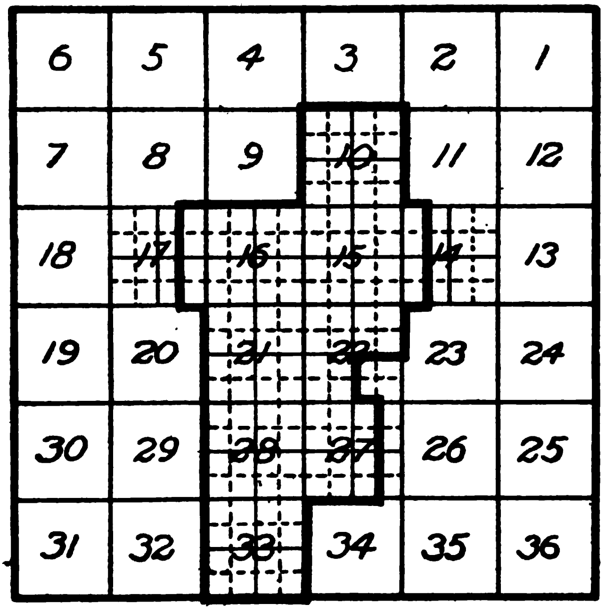


FIG. 21.—Cinder Cone National Monument, within Lassen Peak National Forest, Cal.

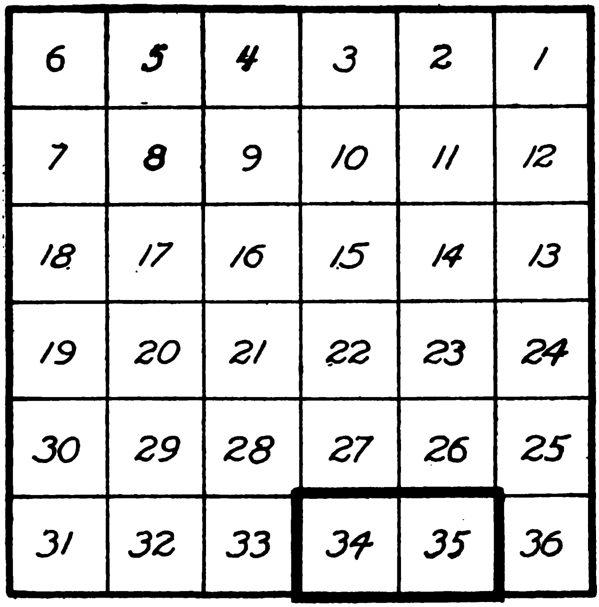


FIG. 22.—Lassen Peak National Monument, within Lassen Peak National Forest, Cal.

## TONTO NATIONAL MONUMENT.

The Tonto National Monument was created by proclamation dated December 19, 1907. It is located in Gila County, Ariz., and embraces two prehistoric ruins of cliff dwellings located somewhat less than 2 miles south of the Salt River Reservoir constructed by the Reclamation Service in the valley of the Salt River within the Tonto Basin, and is about 5 miles southeasterly from the town of Roosevelt. The prehistoric ruin is situated in the high, flaring entrance to a large, shallow cavern, is three stories high, approximately 60 feet wide and 30 feet deep, and contains 14 or more rooms.

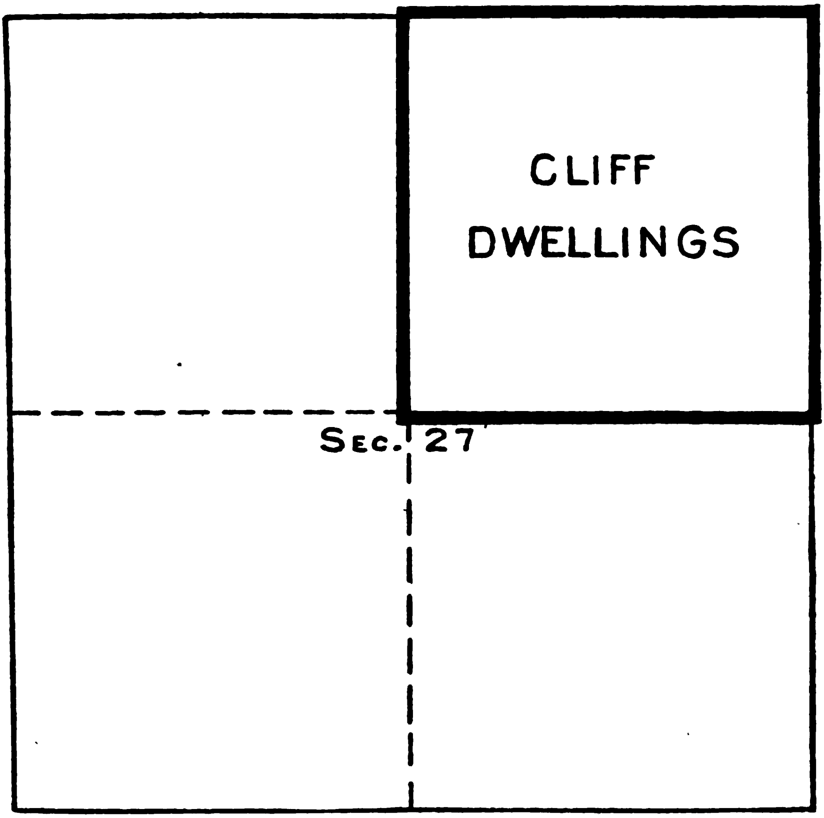


FIG. 23.—Gila Cliff-Dwellings National Monument, within Gila National Forest, N. Mex., embracing NE. ¼ of sec. 27, T. 12 S., R. 14 W., New Mexico principal meridian and base.

## GRAND CANYON NATIONAL MONUMENT, ARIZ.

A considerable portion of the area set aside by the proclamation creating this national monument is covered by three different proclamations, one of which created the Grand Canyon Forest Reserve, one the game preserve embracing that part of the national forest north of the river, and the third the monument proclamation. It is be-

lieved that the most wonderful portion of the canyon is contained within the present limits of the national monument and game pre-
Steps have been taken to create a national park of the Grand Canyon of the Arizona, and a bill (H. R. 6331) providing for such purpose was introduced in Congress April 20, 1911, and is now pending before that body. The Association of American Geographers has recommended that the above-mentioned park be designated as Powell National Park, and the Geological Society of America
serves.

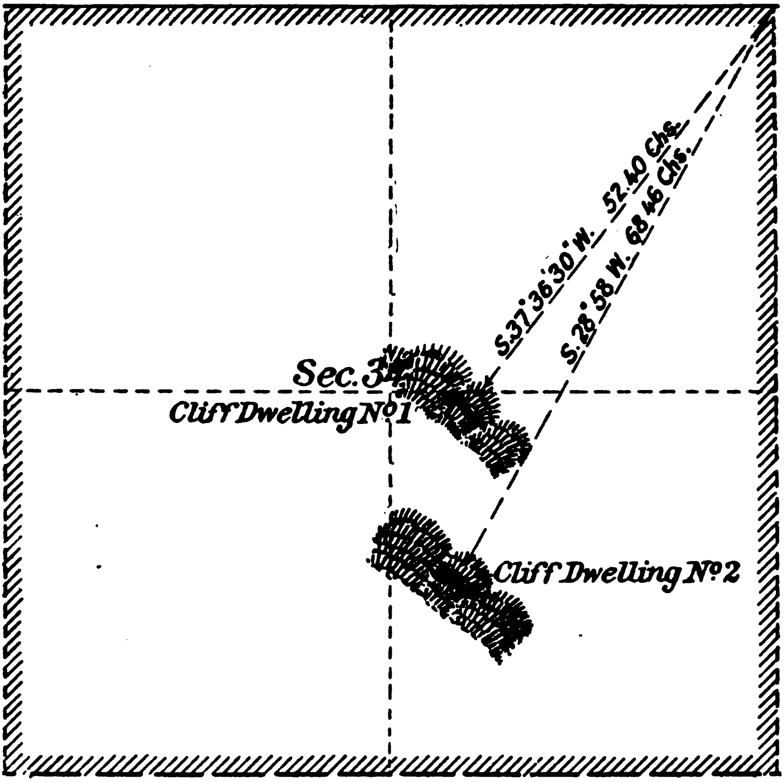


FIG. 24.—Tonto National Monument, unsurveyed sec. 34, T. 4 N., R. 12 E., Gila and Salt River meridian, Ariz., containing 640 acres.

has approved the naming of the national park in the Grand Canyon of the Colorado after its explorer, Maj. J. W. Powell.

## JEWEL CAVE NATIONAL MONUMENT.

Jewel Cave, which is located 13 miles west and south of Custer, the county seat of Custer County, S. Dak., was discovered on August 18, 1900, by two prospectors, Albert and F. W. Michaud, whose attention was attracted by the noise of wind coming from a small hole in the limestone cliffs on the east side of Hell Canyon. In the hope of discovering some valuable mineral and the source of the wind, these men, in company with one Charles Bush, enlarged the opening. Jasper and manganese are found in the cave, but to what extent is not definitely known.

The prospectors have followed the main descending wind passage for a distance of 1½ miles, which point the explorers believe to be

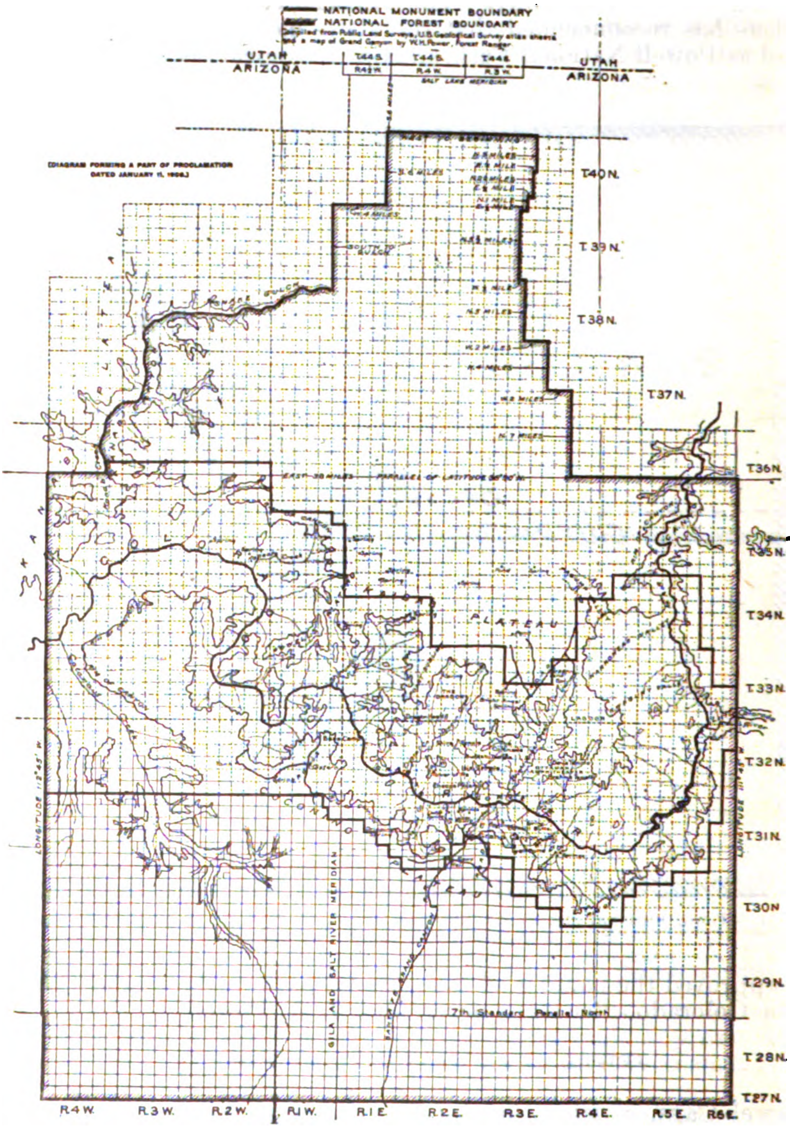

NATIONAL MONUMENT BOUNDARY
NATIONAL FOREST BOUNDARY
Compiled from Public Land Surveys, U.S. Geological Survey atlas sheets and a map of Grand Canyon by W.H. Power, Forest Ranger
UTAH
ARIZONA
T44S.
R4½W.
T44S.
R4W.
T44S.
R3W.
SALT LAKE MERIDIAN
(DIAGRAM FORMING A PART OF PROCLAMATION DATED JANUARY 11, 1908.)
T40N.
T39N.
T38N.
T37N.
T36N.
T35N.
T34N.
T33N.
T32N.
T31N.
T30N.
T29N.
T28N.
T27N.
PLATEAU
7th Standard Parallel North
GILA AND SALT RIVER MERIDIAN
R4W.
R3W.
R2W.
R1W.
R1E.
R2E.
R3E.
R4E.
R5E.
R6E.

FIG. 25.—Grand Canyon National Monument, within Grand Canyon National Forest, Ariz.

from 600 to 700 feet below the entrance, and have explored numerous side galleries and passages. However, the cave is far from being fully explored.

The cave, as far as known, is located in limestone formation and is apparently the result of action of water. A prominent geologist who visited this cave believes it to be an extinct geyser channel. The cave, as far as explored, consists of a series of chambers, connected by narrow passages with numerous side galleries, which increase in size as the distance from the entrance becomes greater.

The explorers have been careful observers of the action of the wind within the cave. They have discovered that ordinarily the wind blows in and out of the cave for regular periods, the periods of blowing in and out being 15 hours each, although they have known the periods to be of 72 hours' duration. Other wind passages have been discovered in the vicinity of the cave.

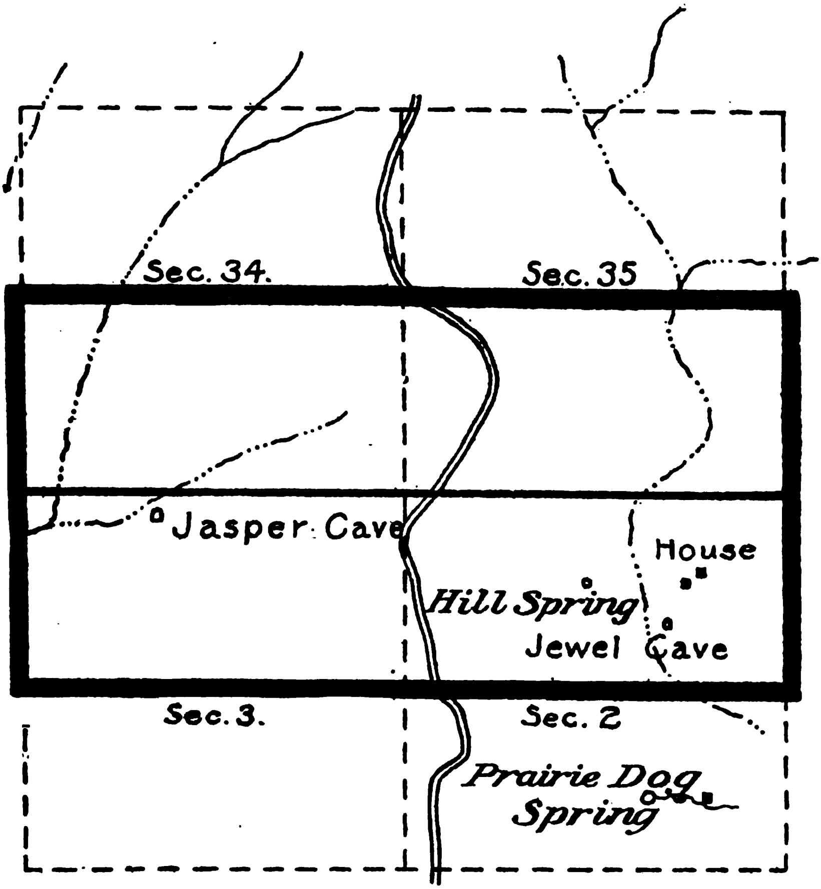


FIG. 26.—Jewel Cave National Monument, within Black Hills National Forest, S. Dak., Tps. 3 and 4 S., R. 2 E., Black Hills meridian.

## WHEELER NATIONAL MONUMENT, COLO.

The lands embraced in this national monument are situated near the headwaters of the middle fork of Bellows Creek, a northern tributary of the Rio Grande del Norte, about 10 miles northeast of

Wagon Wheel Gap, Colo., and 2 miles south of the crest of the Continental Divide.

The tract lies on the southern slope of the ridge which forms the crest of the Continental Divide. It is traversed from north to south by numerous deep canyons with very precipitous sides, the intervening ridges being capped by pinnacle-like rocks, making it practically impossible to cross the tract from east to west, even on foot. There are also many crevices cutting the ridges transversely, making an intricate network of ravines separated by broken precipitous ledges and broken mesas.

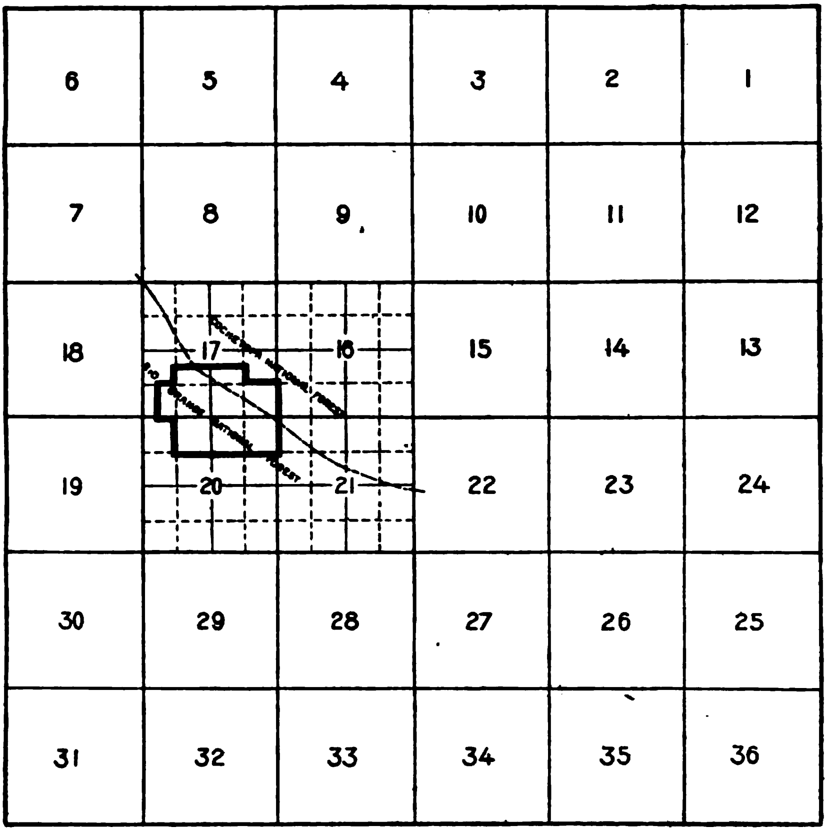


FIG. 27.—Wheeler National Monument, within Cochetopa and Rio Grande National Forests, Colo., T. 42 N., R. 2 E., New Mexico principal meridian and base.

It is probable that the formation found here is the result of a succession of outpourings of lava and showers of volcanic ash which have left a series of nearly horizontal strata of varying degrees of hardness. Numerous pebbles and breccia of a flint-like rock are imbedded in the softer lavas which were probably gathered up by the flowing lava mud from the original bedrock. The formation is for the most part scoriaceous tufa and trachyte, with some rhyolite. The effect of erosion on this formation has been to cut it into sharply defined forms of many kinds. The harder broken rocks imbedded in the lavas have acted as veritable chisels, greatly accelerating erosive action and making the lines and angles more sharply defined than would be the case in ordinary weathering. This erosion is still going on at a remarkably rapid rate, making the place very interesting from the geological point of view.

The fantastic forms resulting from the rapid erosion make this spot one of exceptional beauty. The numerous winding canyons, broken ridges, pinnacles, and buttes form such striking and varied scenes that it will be much visited by tourists when it has been made accessible by the construction of roads and trails.

From the most reliable data it is believed that the ill-fated expedition of John C. Fremont, in 1848, reached this immediate vicinity, when disaster came upon the party, compelling it to turn back. Skeletons of mules, bits of harness, and camp equipage are found here, lending force to the recorded data.

## MOUNT OLYMPUS NATIONAL MONUMENT, WASH.

This monument was set aside by Presidential proclamation of March 2, 1909, and contained approximately 608,640 acres. It was created for the purpose of preserving many objects of great and unusual scientific interest, embracing numerous glaciers, and the territory has also been for time immemorial the summer range and breeding ground of the Olympic elk, a species which is rapidly decreasing in numbers. A bill was introduced in Congress on July 15, 1911, providing for the setting aside as a national park the same tract of land as was set aside by proclamation of the President creating the Mount Olympus National Monument.

By Presidential proclamation of April 17, 1912, certain lands have been eliminated from the original area embraced in the monument. This proclamation providing therefor is as follows:

> I, WILLIAM H. TAFT, President of the United States of America, by virtue of the power in me vested by section 2 of the act of Congress approved June 2, 1906, entitled "An act for the preservation of American antiquities," do hereby declare and proclaim that the south half of the southwest quarter of section twenty-one, and the north half of the the northwest quarter of section twenty-eight, in township twenty-four north, range eight west, Willamette meridian, Washington, be, and the same are hereby, eliminated from the Mount Olympus National Monument. The provisions of the proclamation of March 2, 1909, shall remain in full force and effect as to all other lands thereby reserved as a national monument.
>
> In witness whereof I have hereunto set my hand and caused the seal of the United States to be affixed.
>
> Done at the city of Washington this seventeenth day of April, in the
> [SEAL.] year of our Lord one thousand nine hundred and twelve, and of the
> Independence of the United States the one hundred and thirty-sixth.

## OREGON CAVES NATIONAL MONUMENT, OREG.

The Oregon Caves or "Marble Halls" of Josephine County, discovered in 1874, are located in the Siskiyou National Forest, about 30 miles south of Grants Pass in Cave Mountain; a peak of the Greyback Range, that divides the headwaters of the Applegate and Illinois Rivers, and connects with the Siskiyou Mountains near the north line of California.

Cave Mountain, the peak which contains these caves, rises to an elevation of about 6,000 feet, and is of limestone formation. The main openings around which the national monument has been created are at an elevation of 4,000 feet, but the entire mountain side for 5 or 6 miles shows caverns of various sizes and in all probability throughout its interior is honeycombed like the portion that has been explored.

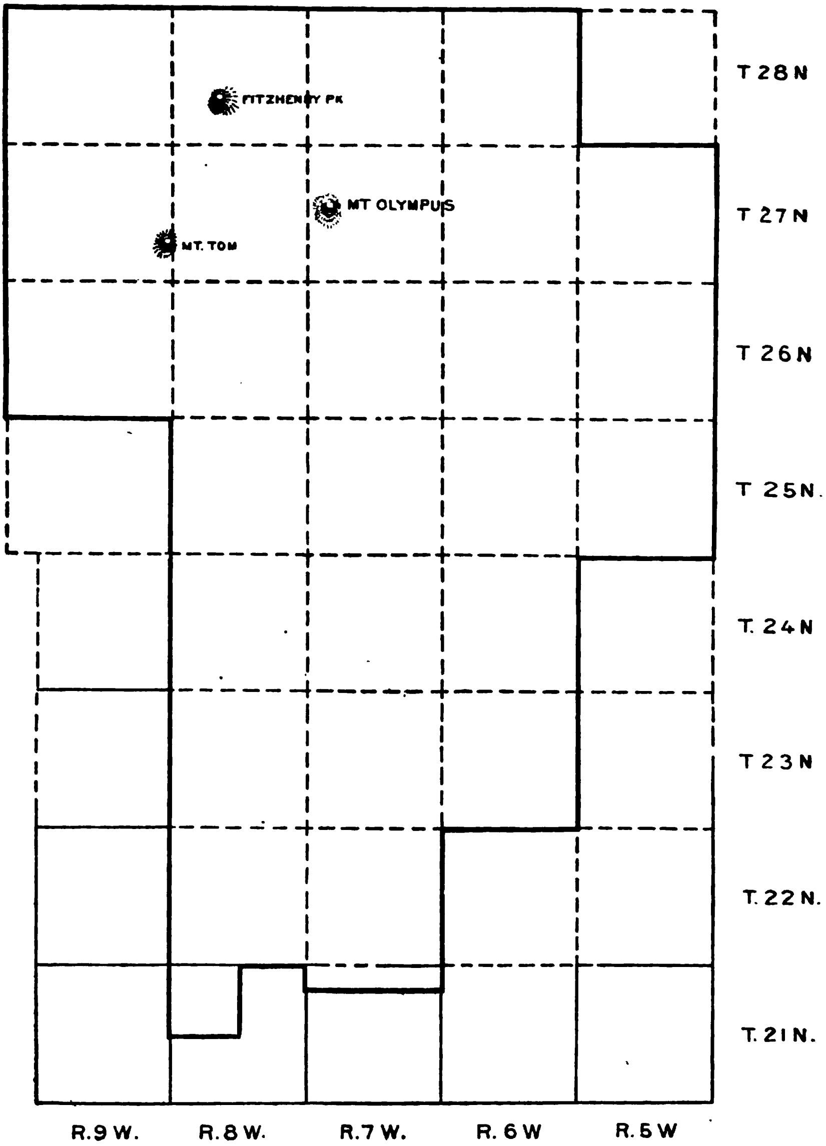


FIG. 28.—Mount Olympus National Monument, within Olympic National Forest, Wash.

These caves are more of a series of galleries than of roomy caverns, though many beautiful rooms have been discovered, while miles of galleries have been visited; but there are thousands of passageways leading in all directions—partly closed by stalactites—that have never been opened, and with the distant and unexplored openings on the opposite side of the mountain the magnitude of the Oregon Caves can be said to be practically unknown.

Many small streams are found at different elevations, and larger bodies of running water can be heard in pits bottomless so far as measured (by 300-foot line). This running water probably accounts for currents of wind that in some of the galleries blow so hard as to extinguish an open light at once.

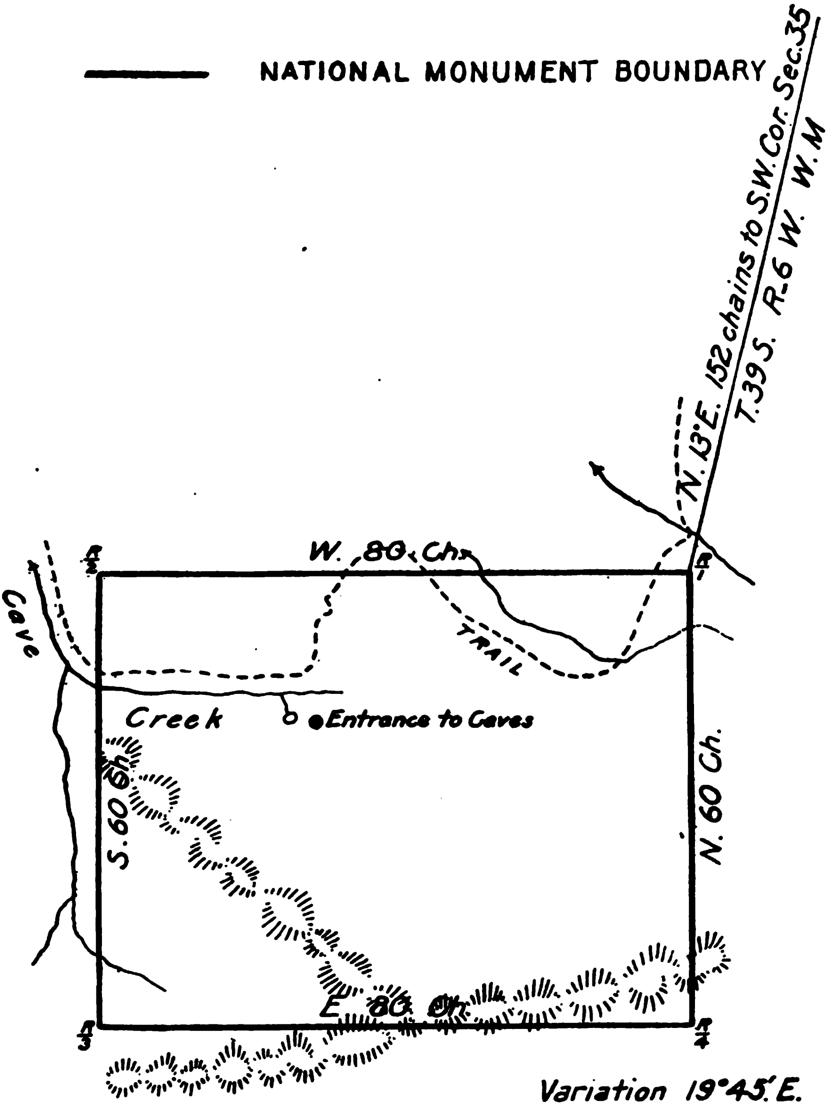


FIG. 29.—Oregon Caves National Monument, within Siskiyou National Forest, Oreg.

The lime deposits take many beautiful forms—massive pillars, delicate stalactites of alabaster whiteness with the crystal drop of water carrying its minute deposit of lime from which they are formed, and broad sheets resembling drapery with graceful curves and waves that were certainly made by varying currents of wind during formation.

The Forest Service has rebuilt and improved the trails leading to the caves from each side of the divide in order to more easily protect the valuable forest surrounding and to make the caves more accessible to tourists.

## DEVILS POSTPILE NATIONAL MONUMENT, CAL.

The Devils Postpile consists of basaltic rocks laid down in the form of an immense pile of posts, and while there are similar formations in different parts of the country, this is especially prominent, being one of the most noted of its kind on the continent, and said to rank with the famous Giants Causeway on the coast of Antrim, in the north of Ireland.

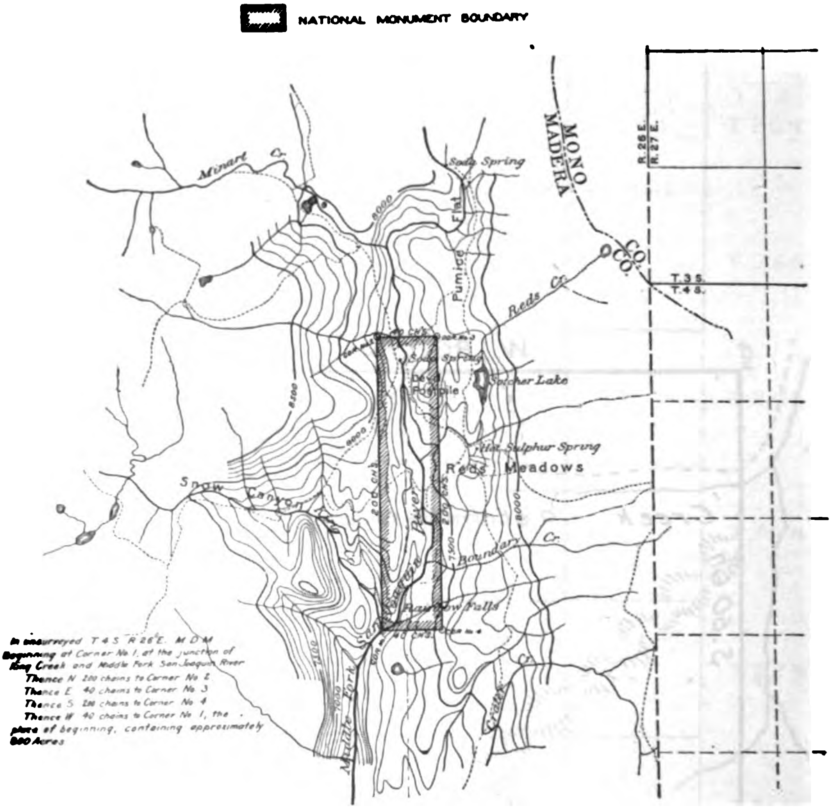

NATIONAL MONUMENT BOUNDARY
Minaret Cr.
Soda Spring
MONO
MADERA
Co.
Co.
R.26E.
R.27E.
T.3S.
T.4S.
Pumice Flat
Reds Cr.
8000
8500
9000
Soda Springs
Devils Postpile
Sotcher Lake
Hot Sulphur Spring
Reds Meadows
Snow Canyon
San Joaquin River
200 chs.
200 chs.
40 chs.
40 chs.
7500
8000
Boundary Cr.
Rainbow Falls
Middle Fork
7000
Crater Cr.
In unsurveyed T 4 S R 26 E. M D M
Beginning at Corner No 1, at the junction of King Creek and Middle Fork San Joaquin River
Thence N 200 chains to Corner No 2
Thence E 40 chains to Corner No 3
Thence S 200 chains to Corner No 4
Thence W 40 chains to Corner No 1, the place of beginning, containing approximately 800 Acres

FIG. 30.—Devils Postpile National Monument, Cal.

Below the postpile and above the junction of King Creek and the middle fork of the San Joaquin River is Rainbow Falls, similar to the well-known Vernal Falls of the Yosemite Valley, and one of the few of its kind on the continent.

## BIRD RESERVES.

All of the bird reserves have been created through reference from the Interior Department to the President of forms of Executive orders providing therefor. These reserves are regarded as in all essential particulars reservations of public lands for public use or other purposes, for which there are numerous precedents. The first specific act of Congress providing for the protection of birds by bird reserves created by Executive order was introduced by Hon. John F. Lacy, of Iowa, and became a law on June 28, 1906. (34 Stat., 536.) This act made it unlawful to kill birds, to take their eggs, or to willfully disturb birds upon the reservations, and it provides a fine of not exceeding $500, or imprisonment for not exceeding six months, or both fine and imprisonment, for each conviction secured. This law was substantially reenacted in the new penal code approved March 4, 1909 (35 Stat., 1104), in the following language:

> SEC. 84. Whoever shall hunt, capture, wilfully disturb, or kill any bird of any kind whatever, or take the eggs of any such bird, on any lands of the United States which have been set apart or reserved as breeding grounds for birds by any law, proclamation, or Executive order, except under such rules and regulations as the Secretary of Agriculture may from time to time prescribe, shall be fined not more than five hundred dollars, or imprisoned not more than six months, or both.

The reservations now existing, which are being administered under the direction of the Biological Survey, Department of Agriculture, are 52 in number, as follows:

*Bird reserves created.*

| Name of reservation. | Date. | Location. | Area. |
|---|---|---|---|
| Pelican Island | Mar. 14, 1903 | East Florida coast | 5.50 acres. |
| Breton Island | Oct. 4, 1904<br>Nov. 11, 1905 | Southeast coast of Louisiana | Unknown. |
| Stump Lake | Mar. 9, 1905 | North Dakota | 27.39 acres. |
| Huron Islands | Oct. 10, 1905 | Lake Superior, Mich | Unknown. |
| Siskiwit Islands | do | do | Do. |
| Passage Key | do | Tampa Bay, Fla | 36.37 acres. |
| Indian Key | Feb. 10, 1906 | do | 90 acres. |
| Tern Islands | Aug. 8, 1907 | Mouths of Mississippi River, La. | Unknown. |
| Shell Keys | Aug. 17, 1907 | South Louisiana coast | Do. |
| Three Arch Rocks | Oct. 14, 1907 | West Oregon coast | Do. |
| Flattery Rocks | Oct. 23, 1907 | West Washington coast | Do. |
| Quillayute Needles | do | do | Do. |
| Copalis Rock | do | do | Do. |
| East Timbalier Island | Dec. 7, 1907 | South Louisiana coast | Do. |
| Mosquito Inlet | Feb. 24, 1908 | East Florida coast | Do. |
| Tortugas Keys | Apr. 6, 1908 | Florida Keys, Fla | Do. |
| Klamath Lake | Aug. 8, 1908 | Oregon and California | Do. |
| Key West | do | Florida Keys, Fla | Do. |
| Lake Malheur | Aug. 18, 1908 | Oregon | Do. |
| Chase Lake | Aug. 28, 1908 | North Dakota | Do. |
| Pine Island | Sept. 15, 1908 | West Florida coast | Do. |
| Matlacha Pass | Sept. 26, 1908 | do | Do. |
| Palma Sola | do | do | Do. |
| Island Bay | Oct. 23, 1908 | Florida | Do. |
| Loch Katrine | Oct. 26, 1908 | Wyoming | Do. |
| Hawaiian Islands | Feb. 3, 1909 | Hawaii | Do. |
| East Park | Feb. 25, 1909 | California | Do. |
| Cold Springs | do | Oregon | Do. |
| Shoshone | do | Wyoming | Do. |
| Pathfinder | do | do | Do. |
| Bellefourche | do | South Dakota | Do. |
| Strawberry Valley | do | Utah | Do. |
| Salt River | do | Arizona | Do. |
| Deer Flat | do | Idaho | Do. |
| Minidoka | do | do | Do. |
| Willow Creek | do | Montana | Do. |
| Carlsbad | do | New Mexico | Do. |
| Rio Grande | do | do | Do. |

*Bird reserves created*—Continued.

| Name of reservation. | Date. | Location. | Area. |
|---|---|---|---|
| Keechelus Lake | Feb. 25, 1909 | Washington | Unknown. |
| Kachess Lake | do | do | Do. |
| Clealum Lake | do | do | Do. |
| Bumping Lake | do | do | Do. |
| Conconully | do | do | Do. |
| Bering Sea | Feb. 27, 1909 | Alaska | Do. |
| Pribilof | do | do | Do. |
| Tuxedni | do | do | Do. |
| Farallon | do | California | Do. |
| Culebra | do | Porto Rico | Do. |
| Yukon Delta | do | Alaska | Do. |
| St. Lazaria | do | do | Do. |
| Bogoslof | Mar. 2, 1909 | do | Do. |
| Clear Lake | Apr. 11, 1911 | California | Do. |

BIRD RESERVES ENLARGED.

| | | | |
|---|---|---|---|
| Pelican Island | Jan. 26, 1909 | Florida | Unknown. |
| Mosquito Inlet | Apr. 2, 1909 | do | Do. |

One new reserve for the protection of native wild birds was created during the year, to wit, the Clear Lake Reservation, in California, which was set aside by Executive order of April 11, 1911. A number of these reservations lie within tracts reserved or set aside for purposes other than the protection of birds, such as reclamation withdrawals and naval reserves, but in all such cases the administration of the bird reservation is made subject to the use of the reservation under the primary and more important segregation.

# REPORT OF THE SUPERINTENDENT OF THE HOT SPRINGS RESERVATION.

# REPORT ON THE HOT SPRINGS RESERVATION, HOT SPRINGS, ARK.

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Department of the Interior,
U. S. Government Reservation,
*Hot Springs, Ark., August 29, 1911.*

Sir: I have the honor to respectfully submit this my annual report for the fiscal year ended June 30, 1911.

## GENERAL STATEMENT.

This is the second report of the affairs of this reservation during my incumbency as superintendent, and the prophesies made in my report for last year have more than been realized in that the past year has the distinction of being the banner year for this great health resort. To illustrate how widely these waters are known, a daily bathhouse report, selected at random, shows patients here from seven foreign countries. The cures effected here are so startling as to seem almost miraculous.

The past year was the most prosperous ever known here, notwithstanding that there is an element in the city which has felt that the success of the resort depended on the existence of certain amusements prohibited by law. In my opinion, people come here for the benefit of the waters and for rest and recreation; and while, as a resort city, many expect it to be free and open, with no restrictions, it has been demonstrated beyond question that it will grow and continue to thrive without questionable features. At the same time, every amusement should be furnished consistent with the good morals and civic decency of a resort so closely allied with the Government. In this connection, the fact that the Government has taken so decided control of local conditions is doubtless one reason for so many people coming here.

To afford some idea of how successful the past year has been, I give some comparative figures of arrivals and bathhouse receipts. The arrivals for March, 1910, which up to that time was the best year ever known, were 14,878; the arrivals for March, 1911, were 18,793. Every month of this year shows more visitors than the corresponding month during the previous year, and I estimate there was an increase of visitors here this year over last of over 20,000, the total number of visitors for the year being approximately 130,000.

When I first took charge and endeavored to create some sort of a system and change local conditions for the better, I was told my ideas were so revolutionary as to be almost certain of disaster; that the old system was the only one under which existence here was possible. I felt the people were in error and proceeded to suggest such changes as I deemed absolutely necessary for the future of the resort. I was told more than once that such years as 1905 and 1907, when everything was wide open and racing was at its height, could never be expected again. The figures on file in this office utterly disprove this assertion. I give here a few comparisons: The bathhouse receipts for all the bathhouses for March, 1905, were $27,999.70; for March, 1907, they were $30,615.24; and for March, 1911, they were $32,330.34; so that every previous year, including the banner years, is far behind this year; and I feel sanguine that the coming year will exceed this one by a still greater ratio. This is essentially a health resort, and as such it should be most jealously guarded and maintained.

It is gratifying in the extreme to compare the total receipts of the bathhouses for the fiscal years 1910 and 1911. The total receipts amounted to $217,916.90 in the fiscal year 1910 and to $253,314.42 in the fiscal year 1911, making a net gain in favor of 1911 of $35,397.52.

## BATHHOUSES.

The schedule of prices for baths at the various bathhouses, as prescribed by the department, is as follows:

*Table of maximum rates for single baths and course of 21 baths.*

| Name of bathhouse. | Single baths. | 21 baths. | Name of bathhouse. | Single baths. | 21 baths. |
|---|---|---|---|---|---|
| Alhambra | $0.30 | $5.00 | Maurice | $0.40 | $7.00 |
| Arlington | .50 | 10.00 | Moody | .40 | 7.00 |
| Crystal (colored) | .25 | 4.00 | Ozark | .25 | 4.00 |
| Eastman | .50 | 10.00 | Ozark Sanatorium | .35 | 6.00 |
| Great Northern | .30 | 5.00 | Palace | .40 | 7.00 |
| Hale | .40 | 7.00 | Park, lower floor | .35 | 6.00 |
| Horseshoe | .25 | 4.00 | Park, upper floor | .50 | 10.00 |
| Hot Springs | .40 | 7.00 | Rammelsberg | .20 | 3.00 |
| Imperial | .45 | 8.00 | Rector | .40 | 7.00 |
| Lamar | .40 | 7.00 | Rockafellow | .35 | 6.00 |
| Magnesia | .30 | 5.00 | St. Joseph's Infirmary | .40 | 7.00 |
| Majestic | .45 | 8.00 | Superior | .35 | 6.00 |

*Business of bathhouses, fiscal year ended June 30, 1911.*

| Name of bathhouse. | Whole tickets. | Half tickets. | Quarter tickets. | Single paid baths. | Baths sold. | Baths redeemed. |
|---|---|---|---|---|---|---|
| Alhambra | 2,024 | 1,202 | | 3,451 | 55,951 | 7,163 |
| Arlington | 1,279 | 1,132 | | 7,345 | 45,524 | 5,400 |
| Crystal (colored) | 307 | 571 | | 547 | 12,704 | 647 |
| Eastman | 385 | 389 | | 1,713 | 13,688 | 2,240 |
| Great Northern | 454 | 361 | 84 | 1,739 | 14,849 | 1,643 |
| Hale | 1,171 | 868 | | 4,207 | 38,070 | 2,936 |
| Horse Shoe | 1,966 | 1,825 | | 1,141 | 58,711 | 5,662 |
| Hot Springs | 589 | 417 | | 1,387 | 16,635 | 1,687 |
| Imperial | 1,805 | 1,016 | | 2,227 | 51,233 | 6,346 |
| Lamar | 2,422 | 1,726 | 543 | 3,844 | 75,997 | 9,249 |
| Magnesia | 1,694 | 674 | 36 | 1,258 | 42,658 | 4,966 |
| Majestic | 1,750 | 851 | | 1,019 | 46,279 | 7,169 |
| Maurice | 1,866 | 929 | | 1,260 | 50,263 | 7,209 |
| Moody | 760 | 880 | | 918 | 25,673 | 3,550 |
| Ozark | 3,901 | 2,884 | 1,476 | 3,108 | 121,250 | 13,355 |
| Ozark Sanatorium | 162 | | | 40 | 3,542 | 714 |
| Palace | 1,322 | 712 | | 1,205 | 36,087 | 5,195 |
| Park (upper floor) | 500 | | | 103 | 10,108 | 1,111 |
| Park (lower floor) | 1,420 | 727 | | 531 | 31,979 | 4,246 |
| Rammelsberg | 1,187 | 864 | 693 | 2,124 | 37,969 | 4,359 |
| Rector | 637 | 286 | 46 | 935 | 17,402 | 2,945 |
| Rockafellow | 1,747 | 833 | | 1,220 | 46,237 | 3,122 |
| St. Joseph's Infirmary | 495 | 184 | | | 12,295 | 712 |
| Superior | 530 | 198 | 24 | 605 | 13,735 | 2,121 |
| | 30,373 | 19,524 | 2,902 | 41,822 | 878,174 | 108,747 |

*Business of bathhouses, fiscal year ended June 30, 1911*—Continued.

| Name of bathhouse. | Net paid baths. | Amount paid for redeemed baths. | Total receipts less redemptions. | Total expense of operation. | Net loss. | Net profit. |
|---|---|---|---|---|---|---|
| Alhambra | 48,788 | $1,790.75 | $12,197.00 | $6,996.60 | .......... | $5,200.40 |
| Arlington | 40,124 | 2,602.25 | 19,520.25 | 13,636.49 | .......... | 5,883.76 |
| Crystal (colored) | 12,057 | 129.50 | 2,214.25 | 3,002.03 | $787.78 | .......... |
| Eastman | 11,448 | 1,109.85 | 5,541.65 | 4,434.70 | .......... | 1,118.15 |
| Great Northern | 13,216 | 399.35 | 3,379.95 | 3,342.36 | .......... | 37.59 |
| Hale | 35,134 | 1,024.10 | 11,665.95 | 4,829.95 | .......... | 6,835.90 |
| Horse Shoe | 53,049 | 1,132.40 | 10,609.80 | 5,064.95 | .......... | 5,544.85 |
| Hot Springs | 14,948 | 577.00 | 9,130.20 | 6,086.50 | .......... | 3,043.70 |
| Imperial | 44,887 | 2,221.10 | 16,808.50 | 5,888.71 | .......... | 10,919.79 |
| Lamar | 66,748 | 3,083.15 | 22,249.50 | 9,306.70 | .......... | 12,942.80 |
| Magnesia | 37,092 | 1,241.60 | 9,334.40 | 5,282.84 | .......... | 4,051.56 |
| Majestic | 39,110 | 2,581.05 | 14,461.65 | 7,278.61 | .......... | 7,183.04 |
| Maurice | 43,054 | 2,403.30 | 14,351.20 | 5,696.43 | .......... | 8,654.77 |
| Moody | 22,123 | 1,183.45 | 7,581.75 | 4,134.18 | .......... | 3,447.57 |
| Ozark | 107,895 | 2,671.00 | 20,954.00 | 7,317.00 | .......... | 13,637.00 |
| Ozark Sanatorium | 2,828 | 209.35 | 774.65 | 822.00 | 48.35 | .......... |
| Palace | 30,892 | 1,918.00 | 10,675.66 | 5,882.95 | .......... | 4,792.71 |
| Park (upper floor) | 8,992 | 555.92 | 4,495.58 | 3,272.35 | .......... | 1,223.23 |
| Park (lower floor) | 27,733 | 1,274.45 | 9,612.55 | 5,292.65 | .......... | 4,319.90 |
| Rammelsberg | 33,610 | 653.95 | 5,142.25 | 3,270.32 | .......... | 1,871.93 |
| Rector | 14,457 | 981.97 | 4,932.53 | 2,758.08 | .......... | 2,174.45 |
| Rockafellow | 43,115 | 937.70 | 12,471.00 | 6,898.25 | .......... | 5,572.75 |
| St. Joseph's Infirmary | 11,523 | 249.30 | 3,859.70 | 1,518.45 | .......... | 2,341.25 |
| Superior | 11,614 | 636.40 | 3,350.35 | 2,878.85 | .......... | 471.50 |
|  | 774,437 | 31,566.89 | 253,314.32 | 124,848.95 | 836.13 | 112,868.60 |

The attendant's fee charged in all bathhouses is $3 per course of 21 baths, $1 per week, and 15 cents for a single bath. The reports show that the net amount paid the attendants from July 1, 1910, to June 30, 1911, inclusive, is $106,079.95, which exceeds that of last year by $3,342.57. This amount is exclusive of any tips or presents received by them.

Frequent inspection of bathhouses and the close watch over them exercised by the medical director have given the public scientific administration of the waters and wholesome sanitation and hygienic conditions. The bathhouses, as will be seen by their annual reports, have had a splendid year. Never have they known such prosperity as this year has brought them. The bathhouse lessee is now willing to comply with the regulations because he realizes that they are beneficial to him as well as to his patrons.

The spirit of hopefulness for the future is as much manifest by the acts of the bathhouse lessees as anybody, and each appears to be vying with the other as to who will have the best and most up-to-date bathhouse. Early in the spring agreements were entered into between the department and the Maurice and the Rammelsberg bathhouses (the latter now designated as the Buckstaff Baths) for leases for certain periods provided new, modern, fireproof bathhouses were erected in the places of the old ones. The result is that both houses named were demolished, and there are now in course of construction on the old sites two as magnificent bathhouses as can be found in the world. Each will represent an investment of approximately $125,000, and when completed will certainly be an ornament to bathhouse row and a credit to the lessees and the Government.

I have never favored taxing ground rent, but have always advocated that the lessees be required to erect and maintain the very best, high-class bathhouses. This policy met with departmental approval, and I am gratified to be able to report that it will result within the next five years in a bathhouse row consisting of the best and most magnificient bathhouses in the world.

Owing to disagreement between the lessees of the Superior Bathhouse, and their inability to comply with departmental requirements for improvements, that house was closed on March 31, 1911, and still remains closed.

The Imperial Bathhouse lessee has recently entered into a contract with the department for a renewal of his lease, conditioned on his making certain improvements. This has resulted in the closing of this bathhouse, which is now being torn down, and will be reconstructed and beautified at an approximate cost of $50,000. When it is taken into consideration that the Imperial was one of the newest and best bathhouses on the reservation, and that it will be enlarged and practically made new, it will be readily seen what the future promises for the resort in the way of superb bathhouses.

The different individuals and corporations now holding leases for hot-water privileges from the Government reservation, also ground leases, together with the date and expiration of said leases, are given in the following table:

*Hot-water and ground leases.*

| Name of bathhouse, etc. | Lessee. | Tubs. | Date of lease. | Expiration of lease. |
|---|---|---|---|---|
| Alhambra | Alhambra Bathhouse Co | 24 | Feb. 28, 1894 | Feb. 27, 1914 |
| Arlington [1] | Arlington Hotel Co | 60 | Mar. 3, 1892 | Mar. 2, 1912 |
| Crystal | Knights of Pythias (colored) | 12 | Aug. 1, 1903 | July 31, 1913 |
| Eastman [1] | New York Hotel Co | 64 | Nov. 26, 1892 | May 11, 1912 |
| Great Northern | Fannie G. Williamson | 17 | May 25, 1897 | May 14, 1912 |
| Hale [2] | Roots & Eastman | 23 | Jan. 1, 1893 | Dec. 31, 1907 |
| Horse Shoe [2] | D. Fellows Platt | 30 | Jan. 1, 1895 | Dec. 31, 1909 |
| Hot Springs | C. H. V. and G. M. Smith | 16 | Jan. 1, 1903 | Dec. 31, 1912 |
| Imperial [2] | Chas. N. Rix and Mary E. Barnes | 25 | Jan. 1, 1902 | Dec. 31, 1906 |
| Lamar | M. C. Tombler and G. H. Buckstaff | 30 | Jan. 1, 1897 | Dec. 31, 1916 |
| Magnesia [2] | Chas. B. Platt | 30 | Jan. 1, 1895 | Dec. 31, 1909 |
| Majestic | Avenue Hotel Co | 20 | Jan. 1, 1903 | Dec. 31, 1912 |
| Maurice [3] | Maurice, Convers & Maurice | 24 | Jan. 1, 1897 | Dec. 31, 1916 |
| Moody [1] [2] | Nicholas M. Moody | 14 | July 1, 1900 | June 30, 1910 |
| Ozark | F. P. Sorrells and F. B. Latta | 26 | Jan. 1, 1904 | Dec. 31, 1913 |
| Ozark Sanatorium [1] | Ozark Sanatorium Co | 10 | Sept. 16, 1905 | Sept. 16, 1912 |
| Palace | Samuel W. Fordyce | 23 | Jan. 1, 1907 | Dec. 31, 1921 |
| Park [1] | Park Hotel Co | 46 | May 12, 1892 | May 11, 1912 |
| Rammelsberg [2] [4] | Gilbert E. Hogaboom, Aaron H. and Milo R. Buckstaff, Sinclair Mainland. | 18 | Dec. 31, 1906 | Dec. 31, 1908 |
| Rector | Elias W. Rector | 12 | Apr. 16, 1904 | Apr. 15, 1914 |
| Rockafellow | Mahala J. Rockafellow | 18 | July 1, 1901 | June 30, 1916 |
| St. Joseph's Infirmary | Sister Scholastica | 10 | Feb. 1, 1904 | Jan. 31, 1914 |
| Superior [2] [4] | Robert Proctor and R. A. Simpson | 16 | Sept. 15, 1896 | Sept. 14, 1906 |
| Waverly [5] | New Waverly Hotel Co | 20 | Mar. 24, 1893 | Mar. 23, 1913 |
| Horse Pool [6] | Simon Cooper | 2 | Jan. 7, 1908 | Oct. 29, 1912 |
| Arlington Hotel, ground lease. | Arlington Hotel Co | ...... | Mar. 3, 1892 | Mar. 2, 1912 |
| Ground lease | Hot Springs Mountain Observatory Co. | ...... | Oct. 16, 1903 | Aug. 31, 1913 |

[1] Water used in private bathrooms in portion of tubs leased.
[2] Tenants holding over.
[3] Closed Apr. 30, 1911.
[4] Closed Mar. 31, 1911.
[5] Destroyed by fire Jan. 23, 1910.
[6] Water sufficient to supply two tubs.

## DRUMMING.

What has been the worst detriment and curse to this resort for over 40 years is what is known as doctor and hotel drumming. Formerly it was not at all unusual for 20 to 30 hotel runners to meet the visitor at Little Rock or Benton on every train, and frequently some drummer went as far as Memphis and St. Louis. The hotel drumming was but a mere subterfuge in most instances, the real object being to place the visitor in the hands of some physician who would give half his fee to the drummer. I am happy to be able to report that since October 15, 1909, when United States inspectors were placed on all incoming trains to notify the public what to avoid and to give full information as to how to proceed, the drumming on the trains has entirely ceased, and the practice of the doctors dividing fees for drummed patients has been reduced to the lowest ebb ever known.

The announcement made by the United States inspectors on trains is as follows:

> The public is notified that the waters of the Hot Springs are owned and controlled by the United States Government, and it is a violation of the law for any person to drum or solicit patronage on the trains in this State for hotels, boarding houses, bathhouses, or doctors. No one will be permitted to bathe who stops at a hotel or boarding house which drums or employs inside men to drum or solicit for doctors.
>
> The baths are open to everyone without a doctor. You are requested not to take the advice of any hotel man or inside man as to whether you should employ a doctor; but should you employ one, be sure that he is one registered by the Government and permitted to prescribe the baths. If you treat with a nonregistered doctor, or one not authorized to prescribe the baths, the baths will be denied you; and if you bathe or attempt to bathe while treating with a nonregistered doctor, you lay yourself liable to severe penalty. A list of registered physicians can be found in every bathhouse, posted on "bathhouse row," and at the superintendent's office. All information regarding doctors and the baths will be cheerfully given at the superintendent's office, the first office on "bathhouse row."

I do not assert that doctor drumming has been entirely eliminated; there may be isolated cases now and then, but on the whole I can assert without fear of successful contradiction that such cases are few and far between. I am firmly convinced that as long as the list of registered physicians contains doctors who have heretofore drummed, and who believe it their vested right, that drumming on a very small scale will always exist.

I have, through my detective force, kept continually investigating, with the result that the evil has practically ceased; but to completely cut it out, root and branch, would necessitate one of two things: (1) To have annual examinations of all physicians, who would be required to show a clean slate on this subject and also pass such examinations before the Federal Registration Board as it might prescribe. This would in time eliminate all objectionable physicians and materially raise the professional standard. (2) To employ Federal physicians, who shall attend the ill at nominal charges. This may appear at first glance to be Utopian, but I have no doubt that it would result in a great increase in the number of visitors and insure every visitor who comes here an absolutely square deal. These suggestions may seem radical, but the thousands and hundreds of thousands of patrons of this resort are entitled to the very best treatment which human minds can devise.

## FEDERAL REGISTRATION BOARD.

The Federal Registration Board as now organized is composed of five physicians who stand at the very top of their profession, and are earnestly and zealously assisting this office in the enforcement of every rule pertaining to the protection of the visitor.

## MEDICAL DIRECTOR.

During November, 1909, complaint was made that patients bathing at the public bathhouse suffering from different diseases were not properly segregated; that any person could bathe in any pool he desired. This was true. There were no means of discriminating between diseases, and I suggested to the department that the only remedy I could name which would obviate such condition was the employment of a medical director. On August 1, 1910, the department created the office of medical director, and Maj. Harry M. Hallock, United States Army, retired, was appointed to fill that position. Maj. Hallock assumed his duties on September 4, 1910, taking charge of the public bathhouse, and having supervision over the sanitation, hydrotherapy, and hygiene of all the bathhouses. By his untiring efforts the medical director has brought about a scientific administration of these waters.

## IMPROVEMENTS.

During the year many improvements have been made, and I have endeavored in every instance to build not merely for to-day, but for years to come. There has been built a substantial six-room brick cottage for the keeper in Whittington Lake Park at an approximate cost of $2,500. The superintendent's office, which was originally erected for a central pumping station, was completely repaired, a tile roof put on in place of the old tin and composition one, the rooms divided, new floors put down, the interior redecorated and refurnished throughout, and the exterior well painted.

The official residence of the superintendent was completely repaired, a new tile roof was put on, new polished oak floors laid, and everything put in first-class condition.

On the top of East Mountain has been erected a beautiful stone-columned, tile-roofed pavilion, in which it is intended to place a drinking fountain. A contract for a deep well has been let, and I expect shortly to have in operation not only a drinking fountain for the public, but also a place to water stock.

All the pavilions in Whittington Lake Park were re-covered and repainted, as was also the pavilion on Fountain Street containing the only cold springs on East Mountain. There are two of these, one of which, in compliance with instructions of the department, I have named "General Kelley," and the other "Colonel Hamblen," in honor of former superintendents.

A 6-foot concrete sidewalk has been laid in front of the Government lots in blocks 188 and 189, a watering trough for stock has been placed in front of the "Whittington Cold Spring" on block 188, a stone wall with large stone columns on either side, similar to those on the Whittington Lake Park side-gate entrance, is now being erected around this spring. This will add very much to the general effect of the Government properties in that section of the city.

In Whittington Lake Park the six worn-out wooden bridges have been replaced by fine, substantial, reenforced concrete bridges. There is now in course of construction in this park a public-comfort station, which has long been needed. It is contemplated to erect during this year at least two such stations on East Mountain.

A vast amount of ornamental shrubbery and flowers have been planted both in Whittington Lake Park and on East Mountain. On East Mountain a border of flowering shrubs has been placed along the mountain roads to the summit. By trimming the slopes and getting a good stand of Bermuda grass, the picturesque feature of these roads have been much improved.

The maintenance in first-class condition of the 10 miles of mountain road is no small work, and with the limited force available it consumes a great deal of time. The labor is well expended, however, as nothing in Hot Springs, where walking, driving, and horseback riding is so much in vogue, affords the visitor more pleasure than do these mountain roads, all of which are in first-class condition. Substantial improvements have been made on them during the past year.

The stables have been thoroughly repaired and painted, as were also the two reservoirs on East Mountain.

The greenhouse was completely overhauled and reconstructed, so that the reservation has now a first-class greenhouse, and should be able to propagate and raise sufficient plants to fill all requirements. This should prove a material saving, as heretofore it has been necessary to replenish the flowers and shrubbery annually.

In the places of the pine flagpoles that were in front of the superintendent's official residence and office building there have been erected two 60-foot standard iron flagpoles, which were embedded in cement, so that for years to come no charge or expense will arise for this necessity.

This year has been an exceptional one for the forests, the flowers, and the shrubbery. Never have they been more beautiful and luxuriant or in more perfect condition. The park in front of the bathhouse row had several inches of rich earth spread over it in the spring and new grass seed planted, and with the almost perfect seasons we have had this year both the grass and flowers have grown in profusion the entire distance from the superintendent's office to the Arlington Hotel, especially the flowers, which are in splendid condition and elicit favorable comment, satisfaction, and keen enjoyment on the part of the visiting public. This park should each season be replenished with fresh rich earth, so as to maintain it in its present condition.

## GOVERNMENT BATHHOUSE.

The act of Congress approved December 16, 1878, provides:

> That the superintendent shall provide and maintain a sufficient number of free baths for the use of the indigent, and the expense thereof shall be defrayed out of the rentals hereinbefore provided for.

Owing to the inadequacy of the present bathhouse I suggested, in my last report, that a sworn statement was necessary, so that the baths given would be only to those contemplated by the act of Congress referred to. There has always been a belief that more cures were effected by the public baths than by those taken in individual tubs, by reason of the fact that in the public bathhouse there are

13 large pools, somewhat on the order of the old Roman baths, in which the radio-active gas is present in much larger quantities because of the volume of water.

As a result many persons who were amply able to pay took advantage of the free baths. Hence I recommended that each applicant for baths make a sworn statement of his inability to pay. This recommendation, after receiving favorable consideration in the department, resulted in the enactment of the following act of Congress approved March 2, 1911:

> *Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That only persons who are without and unable to obtain the means to pay for baths and are suffering from ailments for which bathing in the water of the Hot Springs Reservation will afford relief or effect a cure shall be permitted to bathe at the free bathhouse on the public reservation at Hot Springs, Arkansas, and before any person shall be permitted to bathe at the free bathhouse on the reservation he shall be required to make oath, before such officer duly authorized to administer oaths for general purposes as the superintendent of the Hot Springs Reservation shall designate, that he is without and unable to obtain the means to pay for baths, and any person desiring to bathe at the free bathhouse on the Hot Springs Reservation making a false oath as to his financial condition shall be deemed guilty of a misdemeanor and upon conviction thereof shall be subject to a fine of not to exceed twenty-five dollars, or thirty days' imprisonment, or both.

After the passage of this law the privilege of bathing in the free bathhouse was limited to those actually indigent. Yet so steady has been the increasing demands that the baths given this year exceed those given last year by nearly 25,000. While this increase seems unusual under the restrictions in force, it is in fact reasonable when it is considered that this was an unprecedented year for visitors, and the proportionate increase of indigent is natural.

I wish to again state that while the present bathhouse is in good repair, sanitary, and well arranged, it is altogether too small. There should be a free bathhouse more distant from bathhouse row, and at least two or three times the size of the present building.

I do not see how the revenues can yield sufficient funds to pay for a new building, so if the Government expects to care for the indigents who come here, Congress should appropriate at least $250,000 for a new bathhouse, fully equipped, for the exclusive use of the indigent.

Should this be done, the present building could be razed, with the exception of the main portion, which, together with the furnace therein, could be utilized for the installation of an electric-light plant and pumping station. At present the light bills for the reservation are approximately $1,200 annually, exclusive of the cost of maintenance of equipment, which is now owned by the Government.

A good small electric-light plant could be installed, using the building as suggested, for approximately $5,000. This would furnish lights for the mountain, Whittington Lake Park, the superintendent's official residence and office, the free bathhouse, the medical director's office and residence, and bathhouse row. This plant would furnish about three times the number of lights now on the reservation.

I recommend this improvement, provided a new Government free bathhouse is arranged for.

The following table shows the result of the operation of the free bathhouse for the fiscal year ended June 30, 1911:

*Baths given by free bathhouse.*

| | |
|---|---|
| Applications for free baths | 9,374 |
| Applications for free baths refused | 300 |
| Tickets issued on original application | 9,074 |
| Tickets reissued on original application | 5,972 |
| Total baths given white males | 138,840 |
| Total baths given white females | 22,601 |
| Total baths given colored males | 41,819 |
| Total baths given colored females | 17,175 |
| Total baths given during year | 220,435 |
| Persons bathed daily (average) | 618 |
| Soldiers and sailors bathed | 712 |

## SALE OF GOVERNMENT LOTS.

In March, 1911, there was held under the supervision of the chief clerk of the department a public auction sale of the remaining 169 lots owned by the Government, aside from those reserved for various purposes. All were sold or permanently withdrawn, except 6, upon which it appeared the appraisement was too high. The majority of the lots sold were disposed of at prices considerably in excess of the appraised values. The sale netted $82,518, which has been set aside for improvements and current expenses of the reservation.

Incidentally I know of nothing which affords stronger proof of the substantial growth of the city and the fullest confidence of its future as a resort than the way these lots sold and the prices they brought.

## RECEIPTS AND DISBURSEMENTS.

The receipts and disbursements during the fiscal year ended June 30, 1911, were as follows:

### RECEIPTS.

| | | |
|---|---|---|
| Balance Hot Springs fund July 1, 1910 | | $37,355.32 |
| Receipts for fiscal year ended June 30, 1911: | | |
| Water rents | $30,960.00 | |
| Ground rents | 5,100.00 | |
| Total receipts | | 36,060.00 |
| Grand total | | 73,415.32 |

### DISBURSEMENTS.

| | | |
|---|---|---|
| Salaries for fiscal year | $28,191.83 | |
| Improvements, repairs, incidentals, and miscellaneous supplies | 21,329.90 | |
| Incurred and expended by superintendent | | $49,521.73 |
| Incurred by superintendent and paid in department | | 3,334.00 |
| Incurred and expended by the department | | 3,519.60 |
| Total disbursements | | 56,375.33 |
| Balances June 30, 1911: | | |
| In the United States Treasury | $16,906.64 | |
| Assistant Treasurer United States, St. Louis, Mo | 118.89 | |
| In hands of disbursing officer, Department of the Interior | 14.46 | |
| Available balance Hot Springs fund July 1, 1911 | | 17,039.99 |
| Grand total | | 73,415.32 |

In addition the proceeds of the Government lot sale, amounting to $82,518, are available for expenditures on the reservation. This sum, added to balance given above, makes $99,557.99 available for reservation expenditures.

## OFFICIAL VISIT.

During March of the present year the chief clerk of the department, Mr. Clement S. Ucker, was assigned by the Secretary of the Interior to conduct the sale of the unsold lots belonging to the Government in the city of Hot Springs. He was accompanied by Inspectors E. B. Linnen, Joe H. Norris, and William R. Logan, of the department.

In this connection I wish to say that the visits of the chief clerk to this reservation in 1910 and the present year, his coming in contact with conditions as they actually exist, his observations as to obstacles that must be surmounted in the effective enforcement of the rules and regulations, his having an opportunity to meet the leading citizens of this community and ascertain the public opinion of the wishes and intentions of the department regarding the present and future for this resort, have resulted in incalculable benefit both to this office and to the community by enlisting the hearty cooperation of the general public in the department's designs for the general upbuilding and development of Hot Springs.

I am strongly of the opinion that the Government has no asset nearly so valuable as these wonderful waters, and that there is nothing in all the world which can bring the same measure of relief and benefit to mankind as these baths. Such being the case, every official encouragement extended by the department stimulates a better and more cordial feeling of cooperation on behalf of the citizens of Hot Springs.

I have been informed that but two Secretaries of the Interior Department have ever visited Hot Springs during the entire period in which the Government has controlled this reservation. I regard this as most unfortunate, for the reason that the importance of these waters to suffering humanity can not be over estimated, and an official intimate knowledge of conditions would necessarily result in much that would prove vastly beneficial both to the department and to the public. I therefore indulge the hope that at no distant date we shall have the honor of an official visit from the present head of the department, when I believe that such an enthusiastic, loyal, and cordial welcome would be extended as would clearly demonstrate the very sincere appreciation with which the department's efforts are held by the citizens here.

## RECOMMENDATIONS.

There is in contemplation the erection of a magnificent fountain to replace the one in front of the superintendent's office, the latter to be duplicated and the two placed on each side of the grand entrance. Both changes are necessary because of the fact that at present the accommodations afforded the public are inadequate. It is also intended to construct a colonnade from the curb line of bathhouse row to the Maurice Spring; and while the spring will be left in its natural shape, ample shelter will be provided for the use of its patrons at all times. This colonnade will be of stone and terra cotta, with walks, grass plots, and flowers its entire length.

During the present summer the lower part of Whittington Lake Park will be filled in and graded, and the present rock walls throughout the entire park will be cemented. Allotment for this work has already been made.

Among the improvements needed is a road leading down from North Mountain to Park Avenue.

It is believed that one of the most practical and beneficial improvements required here at the present time is the construction of a substantial conduit of suitable size along the reservation front to accommodate the pipe lines leading to all the bathhouses on bathhouse row, with manholes at appropriate distances. This would prevent digging up the lawn every time a bathhouse has trouble with its line. There should also be a conduit of like nature built from the main impounding reservoir in the rear of the superintendent's office to the curb line on Reserve Avenue to accommodate the six pipe lines now receiving their supply from this reservoir.

## ADMINISTRATION OF SUPERINTENDENT'S OFFICE.

Important changes have been made during the past year in the administration of the affairs of this office, the most important of which is the requirement that every person not under the care of a registered physician shall first secure a permit from the superintendent's office before he is permitted to bathe. This regulation went into effect December 1, 1910. This has demanded an increase of help in order to properly handle the large number of visitors who necessarily come to the office to procure their bath permits. This custom has reduced the business of nonregistered physicians to the minimum, and I predict that within a few months there will not be a nonregistered doctor doing business in Hot Springs, for the reason that they will be unable to make a living. They are finding it harder and harder each day to persuade patients who are drummed to them to come here and certify to a falsehood in order to get the baths. It is believed that increased results might be accomplished by applying the same rule to the patients of registered physicians as well as to those not under medical treatment.

A modern and complete filing system has been installed, which is an important factor in facilitating the administration of this office, and especially will this be true as the volume of business continues to increase.

## EMPLOYEES.

There are 30 employees, including the superintendent, required to properly maintain and care for the reservation interests. Their names, duties, and compensations, together with the names of the States from which they were appointed, are shown in the following table:

*Reservation employees.*

| | |
|---|---|
| Harry H. Myers, superintendent, appointed from Arkansas | $3,600 |
| B. Frank Bayley, chief clerk and assistant to superintendent, appointed from Arkansas | 1,680 |

| | |
|---|---|
| Miss Una Roberts, clerk stenographer, appointed from Texas | $900 |
| Maj. Harry M. Hallock, medical director, appointed from Vermont | 4,400 |
| J. H. Demby, manager of free bathhouse, appointed from Arkansas (duties are to have general charge of the free bathhouse, receive applications for free baths, collect tickets, and see that the rules and regulations are carried out, together with such instructions as he may from time to time receive from constituted authority) | 1,080 |
| Richard L. Lawrence, head male attendant at free bathhouse, appointed from Arkansas (duties are to have charge of bathtubs, pools, dressing rooms, etc., and see that the same are kept clean; also to have charge of heating plant, electric motor, and pump which furnishes water supply, and to act as manager during the absence of the latter) | 840 |
| Martin Winn, male attendant at free bathhouse, appointed from Arkansas (duties are to have charge of the white men's bathing department and to keep the tubs, pools, and dressing rooms clean and sanitary) | 540 |
| Samuel Clark, male attendant at free bathhouse, appointed from Arkansas (duties are to have charge of the colored men's bathing department and to keep the tubs, pools, and dressing rooms clean and sanitary) | 540 |
| Van Cannon, male attendant at free bathhouse, appointed from Arkansas (duties same as other attendants) | 540 |
| William Clark, male attendant free bathhouse, appointed from Arkansas (duties same as other attendants) | 540 |
| Mary Clark, female attendant at free bathhouse, appointed from Arkansas (duties are to have charge of the white women's bathing department and to keep the tubs and dressing rooms clean and sanitary) | 480 |
| Mattie Fielding, female attendant at free bathhouse, appointed from Arkansas (duties are to have charge of the colored women's bathing department and to keep the tubs and dressing rooms clean and sanitary) | 480 |
| Susie Fielding, female attendant at free bathhouse, appointed from Arkansas (duties same as other attendants) | 480 |
| Jonathan A. Jordan, supervisor on the reservation, appointed from Arkansas (duties are to have charge of the distribution of the hot water and see that each bathhouse gets the amount allotted to it, and act as foreman of foresters and gardeners) | 1,020 |
| Edward Wheelock, policeman, appointed from Arkansas (duties are to have general supervision over all Government property and see that no stock or persons commit depredations on the reservation, observe and report all violations of department rules and regulations, give general information to strangers concerning the reservation, and make arrests when necessity requires) | 840 |
| Miles E. Davis, policeman, appointed from Arkansas (duties same as other policemen) | 840 |
| Frank C. Bloom, policeman, appointed from Arkansas (duties same as other policemen, but now assigned issuing bath permits in the superintendent's office) | 640 |
| Richard L. Gaffney, mounted police for night duty, appointed from Arkansas | 960 |
| Patrick J. Dugan, forester and gardener, appointed from Arkansas (duties are to cultivate and care for shrubbery and flowers, keep up roads, drives, and walks, and make and maintain other improvements on the reservation under direction of the superintendent) | 600 |
| Peter Nelson, forester and gardener, appointed from Arkansas (duties same as other foresters and gardeners) | 600 |
| William F. Jennings, forester and gardener, appointed from Arkansas (duties same as other foresters and gardeners) | 600 |
| Philander H. Bump, forester and gardener, appointed from Arkansas (duties same as other foresters and gardeners) | 600 |
| John Ussery, forester and gardener, appointed from Arkansas (duties same as other foresters and gardeners) | 600 |
| Jap George, forester and gardener, appointed from Arkansas (duties same as other foresters and gardeners) | 600 |
| Bishop H. Burrough, forester and gardener, appointed from Arkansas (duties same as other foresters and gardeners) | 600 |
| Thomas George, forester and gardener, appointed from Arkansas (duties same as other foresters and gardeners) | 600 |

| | |
|---|---|
| **James Daniels, laborer, appointed from Arkansas (duties to care for the horses and vehicles in stables, act as driver for the superintendent when necessary, and perform such other duties as may be required)** | **$600** |
| **Robert L. Stutts, laborer, appointed from Arkansas (duties are to sweep and keep clean the concrete walk in front of bathhouse row, and to remove all trash on the front from grounds not cared for by the bathhouse lessees)** | **600** |
| **Abraham Logan, laborer, appointed from Arkansas (duties are janitor at the office building and messenger and driver for the medical director)** | **600** |
| **Montgomery Prichard, detective, appointed from Arkansas** | **1,080** |

## CIRCULAR OF GENERAL INFORMATION.

I have always felt that it was the duty of the Government to furnish the public with ample and exact information as to what these waters would accomplish and the conditions surrounding them and their uses. On my recommendation the department has issued a circular giving in detail all information likely to be useful to the visitor.

## CITY OF HOT SPRINGS.

Hot Springs is a city of about 16,000 resident population, with churches of all denominations, public and private schools, a fine street railway system, waterworks, electric and gas lights, well-equipped fire department, local and long-distance telephone systems, metropolitan police system, fine city auditorium, and a magnificent race track and State fairgrounds. There are about 600 hotels and boarding houses, which furnish all grades of accommodations for visitors. A fine tennis court in Whittington Lake Park Reservation is always open to the public, as is also a splendid 18-hole golf-link course and country club. Hot Springs is reached by two trunk lines—St. Louis, Iron Mountain & Southern and the Rock Island system.

In conclusion, I indulge the hope that the results accomplished in the administration of the affairs of this reservation during the past year will prove a source of gratification to the department, as I am sure they have to the public. The cordial interest in the advancement of every idea tending to afford a greater degree of relief to a visiting public and the more hearty cooperation of the citizens with this department, as has been manifested in numerous ways during the year; the general improved tone of business and the assurance of a greater hope for the future, taken in connection with the more scientific and efficient administration of these wonderful waters, augur a solid and substantial growth and splendid future and indicate beyond question that so long as the visitor receives the very best treatment amid climatic conditions rarely equaled and unsurpassed, with waters as marvelous in curative properties as they are mysterious in their source, that Hot Springs may well be termed the "World's pleasure ground and health sanatorium."

I have the honor to be, very respectfully,

Harry H. Meyers,
*Superintendent.*

The Secretary of the Interior.

# APPENDIX.

## RULES AND REGULATIONS, WITH ALL AMENDMENTS THERETO, UP TO AND INCLUDING JUNE 30, 1911, FOR THE GOVERNMENT OF ALL BATHHOUSES RECEIVING HOT WATER FROM THE UNITED STATES RESERVATION AT HOT SPRINGS, ARK.

The superintendent of the Hot Springs Reservation is directed to enforce a prompt and faithful compliance with the following rules:

RULE 1. Bathhouses or hotels will be allowed such number of tubs as the Secretary of the Interior may, in his discretion, deem proper and necessary for the public service and the amount of hot water will justify.

RULE 2. The constant flow of hot water for vapor or other baths, even during business hours, or the unnecessary waste of water in any manner, is strictly prohibited, and will, if continued after written notice from the superintendent to stop such waste of water, be considered by the department sufficient grounds for the cancellation of the lease of such offending lessee.

RULE 3. Rentals must be paid quarterly in advance, at the office of the superintendent, and if not paid within five days from the beginning of each quarter the supply of water may be cut off.

RULE 4. The charge for baths at the different bathhouses shall be at the rates fixed by the Secretary of the Interior, and no bath tickets shall be sold for more than said rate, and then only to such persons as intend to actually use them for bathing. In event of charges in a less amount being exacted for baths, such new rate shall at once be reported to the superintendent, and, when approved by the department, shall thereafter become the maximum rate. No bath ticket shall be sold except at the office of the bathhouse where the bath is to be given, and tickets must show the date when issued, the serial number, the number of baths for which issued, the full name of the purchaser, and the amount paid therefor. Bath tickets shall be redeemable for the same proportionate price for which they were sold, when presented by the original purchaser: *Provided*, That when less than seven baths have been taken on any ticket presented for redemption, the bathhouse may charge the rate for single baths for the number of baths taken on said ticket. No bath ticket or part of a ticket shall be reissued after having been redeemed. No bathhouse receiving water from the Hot Springs Reservation will be permitted to issue complimentary bath tickets, except that bathhouse lessees may, on the written permission of the superintendent, issue complimentary bath tickets in such cases as in his judgment justify such action.

The renting and selling of bath robes, towels, soap, toilet articles, or articles of merchandise in bathhouses is prohibited.

RULE 5. The owners or managers of bathhouses receiving waters from the Hot Springs Reservation are prohibited from bathing in said bathhouses persons stopping at any hotel, boarding house, or rooming house which has a drummer or solicitor on trains or the owner of which drums or solicits on trains, or who has employed in or about such house any inside man or person engaged in drumming or soliciting business for doctors or bathhouses; also the owners or managers and the employees of such bathhouses are absolutely prohibited from either directly or indirectly reflecting on or questioning the integrity of the hot-water supply of any other bathhouse, or of claiming superiority of its own supply of hot water over that furnished from the springs on the reservation to other bathhouses. Upon evidence of violation of this rule the superintendent shall report the facts, with his recommendation, to the Secretary of the Interior, looking to the shutting off of the water from any bathhouse or canceling the lease, as the department may determine.

RULE 6. Bathhouse attendants shall be allowed to charge for their services not exceeding 15 cents for a single bath, $1 per week, or $3 per course of 21 baths, to be collected for the attendant by the bathhouse manager and properly accounted for by him to the attendant. The services of the attendants shall include all the necessities of the bath, except towels and bath robes, laundering bath robes, rubbing mercury, and handling helpless invalids. They shall be required to keep themselves in a neat and cleanly condition, both in person and in dress, and may be required to make good any damages accruing from breakage or neglect of duty. It shall be optional with the bather whether he employ an attendant or not. No person shall be employed or permitted to serve or occupy space in any bathhouse as a mercury rubber or as a masseur without the approval of the superintendent first had and obtained; and every person so employed or serving shall be subject and amenable to the rules and regulations the same as attendants and other bathhouse employees.

RULE 7. The payment of any sum of money, or anything of value, either directly or indirectly, by any bathhouse owner, manager, clerk, or attendant as compensation for drumming customers to any bathhouse, or allowing public drummers, drumming doctors, hotel or boarding-house proprietors who are drummers, or persons who work with them as inside men, to bring persons or show them through, or to loiter in or about any bathhouse, is positively forbidden. Upon evidence of violation of this rule, the superintendent shall report the facts, with his recommendation, to the Secretary of the Interior, looking to the shutting off of the water from any bathhouse or canceling the lease, as the department may determine.

RULE 8. The lessee of each bathhouse shall cause to be kept a full and correct daily register of each bath given, the number and kind of bath tickets sold, and the number of complimentary tickets issued each day, etc., such form of register to be approved by the superintendent and a copy therefrom of each day's business to be forwarded to the superintendent daily. No person shall be allowed to bathe without a numbered ticket being issued and a record of the same being kept, and report thereof duly certified by the manager filed with the superintendent on the first day of each month as paid, complimentary, or free baths, together with any information he may have showing a violation of the bathhouse rules and regulations which may be susceptible of proof.

RULE 9. All bathhouses receiving deposits of jewelry, money, or other valuables from bathers must provide means satisfactory to the superintendent of the reservation for the safe-keeping thereof. It is to be understood, however, that the Government assumes no responsibility in the premises. All losses must be promptly reported to the superintendent by the bathhouse manager.

RULE 10. An applicant for baths who is under medical treatment shall not be permitted to bathe in any bathhouse supplied with hot water from the Hot Springs Reservation unless said applicant presents satisfactory evidence that he or she is the patient of a physician who is duly registered at the office of the superintendent as qualified to prescribe the waters of the hot springs and who is known not to engage in drumming for custom: *Provided*, That every applicant for baths not under the care of a registered physician shall be required to make a certificate to be filed with the bathhouse manager that he or she is not under the care of any physician, and should such applicant subsequently employ, consult, or take treatment from any physician while taking baths, then in such case he or she will immediately notify the bathhouse manager of such fact. The violation of this rule by the owner, manager, or any employee of a bathhouse receiving hot water from the reservation will result in the cutting off of the water from the bathhouse or the canceling of the lease, as the department may determine.

RULE 11. Physicians desiring to prescribe the waters of the hot springs, either internally or through the medium of baths, must first be registered at the office of the superintendent of the reservation and shall use only such uniform form of bathing directions as meet with the approval of the superintendent. Registration will be accorded only to such physicians as are found by a board designated by the Secretary of the Interior to have proper professional qualifications and character and who do not engage in drumming for custom. No physician who shall engage in the solicitation of patronage through the medium of drummers or otherwise, or who shall engage in unprofessional, disreputable, or dishonest conduct, or is addicted to the drug or other habit which disqualifies him for the performance of his professional duties, shall be or remain registered. In case any person who, in violation of these regulations, bathes or attempts to bathe or enters or attempts to enter upon the Hot Springs Reservation to bathe shall have the permit of a physician therefor, such physician shall be liable to the penalties provided in the act of April 20, 1904, unless he is regularly registered, but the bather or the person attempting to bathe shall not be liable to the penalties of said act unless it shall be made to appear that he knew or had reason to believe that the physician giving him the permit to bathe was not regularly registered.

RULE 12. If a charge is made to the superintendent in writing under oath, supported by the affidavits of two or more witnesses, that a registered physician has violated any of the laws and regulations pertaining to the government of the bathhouses receiving hot water from said reservation, he shall at once be cited to appear on a day to be named, and within not exceeding 15 days thereafter, before the board of registration and show cause why his name should not be stricken from the register of physicians authorized to prescribe the waters of said springs, and pending investigation and final action upon such charges the right of such physician to prescribe the hot waters may be suspended by the board of registration. The person against whom such complaint is made shall have the right of filing written interrogatories pertinent to the issue to such complainants or witnesses, to be answered by them under oath, and may submit within 20 days thereafter counter affidavits in answer to the charges or the matters contained in the affidavits of said witnesses.

The complainant witnesses may file rebuttal affidavits within 10 days after the service upon them of said counter affidavits, and the hearing of said charges shall be had on the record aforesaid. An appeal from the decision of said board and upon said record may be taken within 7 days from such decision to the Secretary of the Interior.

If upon consideration of the complaint the charge is not sustained, the suspension will be immediately removed. If, however, such charge is sustained, or if default be made, the name of the physician shall be stricken from the registered list.

RULE 13. Persons violating any of the foregoing regulations within the purview of the act of April 20, 1904, entitled "An act conferring jurisdiction upon the United States commissioners over offenses committed in a portion of the permanent Hot Springs Mountain Reservation, Arkansas," and the act of March 2, 1907, amendatory thereof, will be deemed guilty of a misdemeanor, and be subjected on conviction to the payment of a fine, as provided in said act of April 20, 1904, of not exceeding $100, and be adjudged to pay all costs of the proceeding.

RULE 14. All bathhouses shall be kept in a neat, clean, and sanitary condition, and all sewage and waste water properly conducted away, and all underdrainage kept in perfect order. The water-closets shall have sufficient and free connection with the public sewers and be kept in the best order and with the best plumbing furnishings and appliances. Lessees of bathhouses on the permanent reservation shall, under the direction of the superintendent, cultivate and maintain a part of the bathhouse park in front of their respective bathhouses, the space for each to cultivate to be allotted by the superintendent.

RULE 15. Each bathhouse manager, clerk, and attendant shall be required to have a full and complete understanding of the bathhouse rules and regulations before entering upon his duties.

The superintendent is authorized to require the discharge of any bathhouse manager, clerk, attendant, mercury rubber, or masseur for bathhouse drumming or refusing or neglecting to carry out the bathhouse rules and regulations according to the true intent and meaning thereof. Any person discharged for cause from a bathhouse or removed at the request of the superintendent shall not be again employed by the same or any other bathhouse or permitted to render service in any bathhouse without the written consent of the superintendent. Managers must promptly report to the superintendent the name of any person so removed.

A neatly framed copy of the rules and regulations now in force, together with the prices of baths and attendant's fees, both separately and combined, printed in large black type on white cardboard, shall be conspicuously posted in the office of each bathhouse.

## PHYSICIAN'S APPLICATION FOR REGISTRATION.

*To the board of physicians appointed by the Secretary of the Interior to pass upon the qualifications and character of physicians to prescribe the waters from the Hot Springs Reservation:*

1. I was born at ———.

2. My preliminary education was obtained ———. (State common school or collegiate.) (If the latter, name of college and date of degree.)

3. I graduated in medicine from ——— (give name of college), on the —— day of ———, 1——.

4. My State certificate was issued ———. (When and where.)

5. From what county issued ———. (When.)

6. Society membership: County ———; State ———; American Medical Association ——— (yes or no); special, ———.

7. I have practiced at my present location —— years, and have practiced at the following places for the years named ———.

8. I now hold or have held the following positions ———. (Give places of trust or honor held now or in the past, prizes received, and dispensary or college appointments.)

9. I have during the 10 years next preceding the date of this application resided at the following-named places, and was engaged in the following business ———. (State period of residence at each place and business engaged in while there.)

10. I am ———. (State "general practitioner" or specialty, if any.)

11. Do you employ drummers to solicit business? ———. (Yes or no.)

12. Do you pay commissions on any of your professional business, either directly or indirectly? ———. (Yes or no.)

13. Have you paid commissions on any of your professional business or given anything of value, either directly or indirectly, for such purposes during the past two years? ———. (Yes or no.)

14. If so, when did you quit, and why? ———. (Date.)

15. If registered, will you faithfully observe the rules and regulations approved by the Secretary of the Interior regarding the use of the waters of the hot springs? ———. (Yes or no.)

16. My office is ——— Street; residence, ——— Street; telephone number, ———.

Subscribed in my presence and sworn to before me this ——— day of ———, 191—.

——— ———, *Notary Public.*

My commission expires — —.
Reported and examined ———.

## BATH PERMIT FOR PERSONS NOT EMPLOYING PHYSICIAN.

### BATH PERMIT.

No. ——.

OFFICE OF THE SUPERINTENDENT, HOT SPRINGS RESERVATION,
——— ———, *191—.*

In consideration of the issuing of this permit, I hereby certify that I am not under the care of a physician, and if I employ or consult any physician it will be one whose name is on the Government's registered list. I fully understand that it is a violation of the law if I bathe, or attempt to bathe, while treating with any nonregistered physician, and that I lay myself liable to a fine of $100 for each offense, and this permit becomes void.

——— ———.
(Signature of applicant.)

Home Address——— ———.
Local Address——— ———.

## BATH PERMIT.

NOT TRANSFERABLE.

No. ——.

OFFICE OF THE SUPERINTENDENT, HOT SPRINGS RESERVATION,
—— ——, 191—.

*To Bathhouses:*

When presented in person and countersigned by —— it will permit you to sell said person a bath ticket, {he / she} having employed no physician. This permit must be returned to the superintendent's office with your daily report not later than the day next succeeding the day on which it is used.

—— ——,
*Superintendent.*
By —— ——.

Signature of applicant:
—— ——.

Witness:
—— ——,
—— *Bathhouse.*

Void if presented later than second day after date.

## REGULATIONS OF JULY 7, 1900, FOR THE GOVERNMENT OF THE FREE BATHHOUSE.

These baths are provided and maintained by the United States pursuant to the requirements of the act of Congress approved December 16, 1878 (20 Stat., 258), for the use of the indigent only; neither the manager nor attendants are authorized to supply them to others.

The manager of the free bathhouse is required to enforce a strict observance of the following rules and regulations:

RULE 1. No baths will be supplied except on written applications made on blanks furnished at the office of the bathhouse, making full answers to the questions therein propounded; then if the applicant is found to be indigent (in accordance with the common acceptance of the word), the manager will issue a ticket good for 21 baths, which may be reissued on the same application if necessary.

RULE 2. Persons using the free baths are required to maintain quiet and orderly deportment while in or about the bath house, to abstain from the use of tobacco, either by chewing or smoking, while in the pool rooms, dressing rooms, or office, not to scatter rags or paper on the floor, or to loiter in or about the building after bathing.

RULE 3. The wanton exposure of person or entering any of the front rooms in a nude state, the use of loud, vulgar, or profane language, the use of rags, paper, soap, or any foreign substance in the pool rooms is positively prohibited.

RULE 4. Persons using these baths are not allowed to stand or sit on or in any way interfere with the water pipes or valves or to stand on the chairs or benches. All persons entering the house are required to clean their feet at the door and avoid as much as possible bringing dirt or mud on the floors. Boys over 5 years of age will not be allowed in the female department during bathing hours.

RULE 5. Any willful or repeated violation of these rules, or any disorderly or contemptuous conduct, will subject the persons so offending to suspension or expulsion, at the discretion of the superintendent of the reservation.

RULE 6. Neither the manager nor the Government attendants shall be allowed to receive or become responsible for any valuables or t charge any fees for any service rendered to bathers which comes within the direct line of their duty.

RULE 7. The manager is required to enforce all the foregoing rules and to maintain good order in and about the bathhouse, to see that all indigent persons applying are supplied with baths, and to make a written report to the superinendent each month on blank forms supplied for that purpose. He may reject any application for free baths if he has reason to believe the applicant has made false answers in his written application, and the aggrieved may appeal to the superintendent of the reservation.

## APPLICATION FOR BATHS AT THE GOVERNMENT FREE BATH HOUSE AT HOT SPRINGS, ARK.

### DEPARTMENT OF THE INTERIOR.

### HOT SPRINGS RESERVATION.

No.———.

Persons desiring to use the free baths are required to answer the following questions, in writing, and sign the same, giving full name: Name, ———; town, ——; county, ——; State, ——; present address in Hot Springs: Street, ———; No. ——; native of what country, ———; age, —— years; have you a family? ——; how many in family? ——; occupation, ———; are you able to work? ——; are you employed now? ——; by whom? ———; in what capacity? ——; do you wish to bathe for your health? ——; with what disease are you afflicted? ———; how long afflicted? ——; are you under treatment of a physician at Hot Springs? ——; if so, give his name and address, ——; do you own any real estate? ——; what is the value of your personal property? $——; how much money have you? $——. *The act of Congress approved December 16, 1878 (20 Stat., 258), restricts the use of free baths to the indigent; in other words, to persons who are poor, needy, in want, or without means of comfortable subsistence.* Do you regard yourself as an indigent person? ——.

Persons accepting and using these baths are required to report to the manager once each week whether they are being benefited by the baths or not, and also when they discontinue bathing.

——— ———. [SEAL.]

HOT SPRINGS, ARK., ———, *19—*.

# REPORT OF THE MEDICAL DIRECTOR OF THE HOT SPRINGS RESERVATION.

# REPORT OF THE MEDICAL DIRECTOR OF THE HOT SPRINGS RESERVATION, ARK.

OFFICE OF MEDICAL DIRECTOR,
*Hot Springs, Ark., August 22, 1911.*

SIR: I have the honor to submit my report covering the period from September 4, 1910 (the date on which I reported for duty), to June 30, 1911.

## GENERAL STATEMENT.

The office of medical director being a newly created one, the duties were outlined by the department as follows:

(1) Full supervision of sanitation, hygiene, and hydrotherapy—in short, all that pertains to the bathing of patients in the leased bathhouses, both on and off the reservation.

(2) Full charge of the Government bathhouse and the employees therein.

(3) Maintenance of a clinic for the education of bathhouse operators and their attendants.

(4) Determination of the fitness of all attendants, physically and otherwise, for the employment in bathhouses, both those operated by lessees and the Government bathhouse.

The reasons for the establishment of the office may be stated briefly as a recognition of the fact that all of the Federal Government's interests here are based on the use of the hot water as a therapeutic agent. The problems of administration grow out of the intent of the acts of Congress of April 20, 1832, and of December 16, 1878. By these acts the curative value of the water was publicly and officially recognized, and its use was to be restricted and regulated by the Federal Government through the Secretary of the Interior, with the view to the single purpose that by preventing monopoly and commercial exploitation, it might be made permanently available for the people. The Hot Springs Reservation was the first national park to be established, and the reputation of the water is so great that it should be classed among the national resources or public utilities.

In the year 1880 the Federal Government relinquished control over a large part of the original reservation contiguous to the springs, and the State assumed jurisdiction. This act has seriously interfered with the intent of the acts of 1832 and of 1878 so far as commercial exploitation is concerned, and is largely responsible for the development of various systems of graft commonly referred to as "drumming." The baneful influence of this system on the visitor and its deleterious effect on the development of the city it would be difficult to overestimate.

The results obtained in the treatment of patients are very greatly influenced by the prevailing municipal conditions. As there is only one hotel on the reservation, which, by reason of its rates, caters to a limited class, the average visitor necessarily procures board and lodging in the city, and is dependent upon the local government for the protection of his rights and interests. He must purchase his medicine and bath outfit from a local drug house and, as the Government makes no provision for medical advice, he is dependent on physicians of the city for professional services. Section 4 of the act of April 20, 1904, authorizes and directs the Secretary of the Interior to make rules and regulations governing the use of the water of the springs, and the act vests in him the duty of determining the eligibility, morally and professionally, of physicians who make application for authority to prescribe the water. But the visitor is dependent upon the municipality for protection from quacks and charlatans, and from the commercial exploitation of secret remedies. These pseudopractitioners and unscrupulous venders of medicine find a lucrative field for their operations in the constantly moving procession of those who come in good faith to be benefited by the water, which in a more or less definite way they understand to be approved, sanctioned, recommended, and controlled by the Federal Government.

Hot Springs has a population of about 15,000, while the number of visitors annually is estimated to be more than 100,000. The actual number of people residing in the city at any one time is probably about double the census population. The difficulty of financing the local government under these conditions is closely related to, if not the direct cause for, the existence and continuance of many conditions which tend to lessen the benefits to be derived by the patient from a course of treatment here.

The report of the city clerk shows that the municipal expenses for the year 1910–11 were $119,291.43, and that they exceeded the income by $30,397.90. The principal sources of revenue were from taxation, $33,380.52; saloons, $36,800; police-court fines, $15,545.25. The income is inadequate to meet even current expenses, and municipal improvements, many of which are greatly needed, can not be effected. The deleterious influence of an excessive number of saloons, of gambling houses, and other objectionable resorts can never be eliminated or brought within reasonable bounds so long as the city is absolutely dependent upon their tolerance for so large a proportion of the revenues necessary to maintain the government as it is. Of the gross taxes 80 per cent go to the State, county, and schools, leaving only 20 per cent for city purposes proper. These conditions have necessarily retarded the growth of this resort, and it is essential to its satisfactory development that some means for greatly increasing the revenues be devised.

At watering places abroad, where the Government exercises jurisdiction over the neighboring municipality, it is customary to tax the visitor for the support of public utility services as it has long been recognized that with a large nontaxable floating population, it is impracticable to maintain satisfactory civic conditions, and to enforce law and order, on the same basis of revenue that pertains to other cities. It would appear practicable to adopt this system here, or the same result could be effected by diverting a part of the proceeds from the baths were it not for the divided jurisdiction and the leasing of the water privileges to private interests.

The second great resource of Hot Springs is its unusually fine climate, which makes out-of-door life not only possible but enjoyable almost every day in the year. Overworked business and professional men, and all who need rest and recuperation, find here in the reservation walks and drives, and in visiting the many interesting points in the vicinity, on the golf course, and at the Country Club, forms of recreation that have a powerful influence in the restoration of health and strength. Much greater development of these features, however, such as the improvement of roads and streets, the erection of a casino for the maintenance of the better class of amusements and entertainments, as well as the establishment of a street cleaning department and a larger police force, could soon be effected were it not for the unfortunate conditions which prohibit the expenditure of the reservation funds or of appropriations from Congress except on the existing permanent reservation, or if local legislative measures could be devised to produce the required revenue.

The development of the city and the value of property depend finally on the therapeutic results obtained from the use of the water. Every business interest is established and maintained to meet the trade demands growing out of the presence of those who come here to use the water. Yet, instead of aiding in the development to its utmost of this one great resource by building up a broad, high-grade, and strictly ethical medical service, there has been permitted to grow up a system of drumming founded upon commercialism, deceit, and falsification that has resulted in unsatisfactory service and been a fruitful source of grievance. It has been the cause of sending back to their homes many dissatisfied patients and often of impairing the confidence of nonresident physicians in the beneficial results to be obtained by treatment here. When it is remembered that the diseases which are most favorably influenced by the water are so common that every practicing physician is repeatedly brought in contact with those suffering from them, and that a considerable percentage of such persons themselves suggest coming here, it is evident what a tremendous advertising medium exists, be it for good or bad, in those returning to their homes. While the solicitation of patronage has commonly been so cunningly conducted that the visitor did not know at the time that half of his fees were diverted to an agent, the average American is sufficiently intelligent to have realized the conditions before he left town, and to have determined whether or not he has received a just return for his money. It rests almost exclusively with the taxpayers and voters of the local community to determine whether the influence of the people leaving Hot Springs shall tend to bring to this resort a greater or lesser number of visitors in the future.

There is a marked and general awakening within the last few years throughout all civilized countries, finding expression through local, State, national, and international organizations, as well as through the public press, to the importance of hygiene, sanitation, and preventive medicine. These subjects are being included in the course of study in the public schools. The antituberculosis crusade, the pending bill for the establishment of a department of public health, the elimination of yellow fever from Cuba and of the bubonic plague from California, the prevention of typhoid fever among the troops on the Mexican frontier, and the exclusion of cholera from the Atlantic seaports are all matters of vital importance and public interest. They have been heralded throughout the length and breadth of the land, so that the average citizen has come to more fully realize the value of scientific methods in medicine and the fact that many diseases are preventable. He is more critical and exacting, and has increasing fear of contracting disease wherever the laws of sanitation are not enforced. Service in the bathhouses that was acceptable a few years ago is no longer so. The building of the two new houses now in process of construction will mark a great step in advance, and other old and insanitary buildings will soon be replaced by new, modern structures.

The general conditions surrounding the visitor coming to Hot Springs for the benefits to be derived from the water gave rise to so much dissatisfaction and to so many complaints that, within the past few years, four separate reports by specially qualified commissioners have been prepared under the direction of the Secretary of the Interior, with a view to determining what steps were practicable for bettering both the environment and the treatment. In each case the conditions above referred to were treated at length, as was also the service of the bathhouses, and the recommendation made that the medical and sanitary work be placed directly under medical supervision. The conditions and customs relating to the actual administration of the baths and the operations of the bathhouses were fully discussed. As they were not essentially different from those existing when the office of medical director was constituted in September last, they will be taken up under the several duties assigned him.

## SUPERVISION OF SANITATION, HYGIENE, AND HYDROTHERAPY.

The first duty assigned to the medical director was outlined as follows: "Full supervision of sanitation, hygiene, and hydrotherapy—in short all that pertains to the bathing of patients in the leased bathhouses both on and off the reservation."

Under this heading matters of sanitation and hygiene are being dealt with by inspection of the bathhouses and by class instruction of the attendants. Generally there has been displayed on the part of the managers a willingness to cooperate for the improvement of the service, but there have been a few exceptions. Complaints from bathers as to conditions of uncleanliness are received with sufficient frequency to indicate that considerable improvement is yet possible. The personal equation of the manager is very evident, and the houses might easily be designated as first, second, and third class, largely in accordance with his efficiency.

"All that pertains to the bathing of patients," as a part of the first duty assigned this office, has in the past had a very close and direct relation to the drumming heretofore mentioned, for this practice was largely relied upon to procure patronage to the exclusion of that form of competition which has for its basis the most efficient service. After the patient was once turned over to the hotel or boarding house, to the doctor, to the bathhouse, to the druggist (and not unlikely to a gambling house), and made to pay in advance at each, there was little more to be derived from him, and it became expedient to economize wherever practicable in the service rendered. While these conditions are undoubtedly much less obnoxious than they were a few years ago, and while through the efforts of the present superintendent, drumming on the trains has been eliminated and the bathhouses may be said to have given up the practice, it still persists in less obtrusive forms. Inasmuch as doctor drumming is the essence of this evil, which will cease to exist whenever all the doctors decline to avail themselves of the services of the drummer, it is urged that too great stress can not be laid upon the importance of a rigid inquiry into the character and history of applicants for registration, and a sufficiently thorough examination made to exclude all who are not graduates of first-class medical colleges and thoroughly competent to practice their profession.

The fact that the average physician's practice here is largely made up of transients, many of whom may never be expected to return, who are strangers to the town, and who have no special preference in employing a physician beyond a recommendation that may reach them through the drummer, makes the elimination of this practice all but impossible. Its complete extinction must depend, finally, upon the ethical sense of the physicians.

There is great need for some form of hospital service to afford relief to those who come to avail themselves of the privileges of the Government free baths. A few are practically helpless when they arrive. The progress of incurable disease deprives some of the ability to earn a living, and as they are unable to return to their homes they become charges upon the city. A considerable number require surgical treatment that can only be given in hospitals. Some need nursing, some food and clothing. Many require treatment that can not be given at the bathhouse. Occasionally insanity develops, and as such cases are not admitted to any of the hospitals, the city jail is the only available place for their care and restraint. As the city's resources are already heavily taxed, and as there is a feeling that these helpless indigents come by invitation of the Government, very limited and inadequate accommodations are provided.

Another greatly felt want is some provision whereby patients can obtain proper food. Suitable diet is of great importance in many conditions, and the average patient living in a boarding house is unable to carry out his physician's directions in this particular.

The establishment of a Young Men's Christian Association, with dormitories and other facilities pertaining to the work of this organization, would undoubtedly be of great advantage to many.

## THE SERVICE OF THE BATHHOUSES.

Many of the buildings are old, poorly planned, and insanitary. Total reconstruction is necessary to obtain satisfactory conditions in several, and very extensive remodeling in nearly all. There is not a single instance of anything approaching good ventilation, and in most there may be said to be none at all, for it is necessary to keep the windows closed to avoid drafts to which the patients are very susceptible while bathing. The vitiation of the air in the bath halls and cooling rooms is very great, and when combined with the odors from the bodies of the perspiring patients and the vapor of the hot water at the high temperature maintained, the conditions become objectionable and insanitary in the extreme.

One of the most unsatisfactory features of administration comes from the small size of the houses, and the general assumption that one person in a supervisory capacity is sufficient. The result is that in no single instance is there anyone to efficiently oversee and direct the bathing. The manager, who is the only person in charge, is so closely confined to his desk, and so fully occupied in selling, punching, and redeeming tickets, locking up and unlocking valuables, caring for umbrellas and coats, and in answering inquiries, that it is rarely possible for him to be in the bath halls more than a few minutes at a time until after bathing hours, and consequently he has very little knowledge of how accurately the bathing directions of physicians are being carried out. The possibility of devoting his attentions to the actual service that forms the basis of the lease is always in inverse ratio to the number of patients being treated.

There should be a head attendant in each bathing department to see that the baths are administered with careful attention to details, and to supervise and direct the work of the attendants. He should not be permitted to bathe patients himself, nor to be absent from the bath department proper during bathing hours. To procure the services of competent men a salary of not less than $75 per month should be paid. More complaints are made by physicians upon this point—the lack of supervision in carrying out bathing directions—than on any other one feature of the service.

The employment of exclusively supervisory head attendants for each bathing department may not be at once practicable, especially in the smaller houses where the number of tubs does not justify the expense. But certain measures of supervision should be insisted upon, while plans for the erection of new buildings, or for the remodeling of old ones, should require such enlargement as would make the essential feature of thorough and effective supervision in administration a matter of course.

As indicating inefficient supervision, the clocks used in timing the baths are not infrequently found stopped, recording a time several hours past, a number of patients having been bathed in the meantime. This is partly due to negligence, but partly to the attendants being required to provide the clocks, with the result that a cheap and inferior timepiece has been purchased.

The same general criticism may be made on the thermometers. The use of these instruments of precision was required in order that the baths might be administered at the exact temperature prescribed, but those provided were of so cheap a grade and so grossly inaccurate that it is certain in many instances the temperature of the water could have been more correctly determined by the hand. A rough test of the accuracy of the thermometers in use was made November 3, 1910, by placing 242 of them in a tub of water at 98° F., with the result that only 90 recorded the true temperature. Fifty-seven showed variations between 4° and 31°, while the difference between the highest and lowest reading was 59°. In 11 the columns of mercury were broken. To correct these conditions orders have been issued directing the use of standardized instruments.

The hot rooms are of the old type, and are so constructed that the patient has to breathe the foul and superheated air of a small chamber or cabinet. In the new houses now in process of construction there will be modern equipment, and sweating can be produced in the hot-air cabinets while the patient breathes the air of a well-ventilated room. With this arrangement it is believed that the temperature of the bath halls can be reduced to about 90°, thus making the conditions much more tolerable.

Heretofore there has been very little tendency to employ the various forms of baths described in textbooks on hydrotherapy. The benefits obtained have been ascribed to the water almost exclusively, rather than to varying methods in its use. The new houses, however, with more complete equipment, will provide opportunities to make use of these different methods should physicians desire to employ them.

During the past six months a number of pieces of sanitary white-enamel iron furniture have been tested, and its superiority should cause it to be installed in the bath halls, cooling, and dressing rooms. The wooden furniture heretofore in use soon loses its varnish, becomes soaked with water and perspiration, and stained with soap and dirt, so as to appear very unattractive.

Another objectionable and insanitary feature is the method commonly employed of keeping the bathers' soap. Patients complain that they do not get their own cakes of soap, or that their soap has been used on some one else, and often express the fear that they may in this way contract disease. Steps have been taken to correct this, and it is believed that a satisfactory system will be installed in the near future.

The laundry service has been as a whole very unsatisfactorily performed. Rule 12 of the bathhouse regulations has been interpreted to require the attendants to wash the towels, and where they have also had to provide soap for this purpose undue economy in its use has commonly been practiced. Few houses have a laundry equipment in any way commensurate with their needs, nor is it possible in the present buildings to install one. Towels are not sterilized except in rare instances, nor is there generally efficient supervision exercised over this process. This part of the service has been dealt with at length in special reports, and it is hoped that an acceptable plan for improvement will soon be in operation.

The method commonly employed of cooling the water in uncovered tanks is open to several objections. First, and of greatest importance, it is the generally accepted belief that the remedial properties are in the contained gases. The water has been found to be radioactive, and its therapeutic value is greatly lessened when it has been long exposed to the air. During the summer months it is difficult to cool it sufficiently, and at times it has been necessary to use the city water to obtain the desired effect. Contamination by dust and insects is unavoidable with the open tanks. At one establishment an improved system has been installed in which the cooling is effected in closed pipes, but this particular plan is probably impracticable for general use. It is asserted by physicians that the results of treatment in this house are much better than when the water was cooled in the open tanks. The best possible water service is of paramount importance, and the advice of a competent engineer should be obtained to devise a satisfactory system.

The physiological effects of the water have never been scientifically and accurately determined, and as its rational use can not be thoroughly understood in any other way it is recommended that a competent physiological chemist be employed to conduct a series of experiments in this direction.

In most houses massage and mercury-rubbing departments are maintained. These have frequently been criticized by physicians chiefly on account of a tendency on the part of the operators to diagnose and treat cases themselves, and to solicit patronage in objectionable ways. This matter has been the subject of a special investigation and report, and doubtless will be satisfactorily adjusted at an early date.

Great interest is felt as to the probable effect of the already widespread use of salvarsan on the number of patients coming to Hot Springs for treatment. Should this new remedy prove as efficient as has been predicted there may be a material diminution in the number of bathers; but as this reduction will be almost wholly among those who are suffering from a disease the prevalence of which in Hot Springs has tended to prevent many of the better class from visiting this resort on account of forced association with these unfortunates, it is not unlikely that the ultimate result will be most gratifying.

The use of common drinking cups, hair brushes, and combs, has been discontinued, and, in so far as it has been practicable with the old houses, carpets and mattings have been removed, and draperies replaced by sheets that can frequently be laundered. All of the new houses should be screened throughout, that flies and mosquitos may not transmit infectious diseases.

## GOVERNMENT FREE BATHHOUSE.

The second duty assigned was the full charge of the Government bathhouse and the employees therein.

In the center of bathhouse row and in the rear of the line of leased bathhouses stands the Government free bathhouse, established by act of Congress of December 16, 1878. This benevolent institution is another mark of the recognition by Congress of the great and general faith in the curative properties of the water, amounting to an invitation to the indigent invalids of the entire country to come to Hot Springs for relief. These sufferers have come from every State in the Union, and are still coming, often as a last resort, and in the hope that the mysterious and miraculous water may cure after their home physicians have failed to afford relief. Churches, fraternal organizations, relatives, and friends often contribute small amounts to enable the sufferer to obtain the benefits of a course of baths. Frequently a man beats his way on a freight train and arrives practically destitute, and at times unable to work, thus becoming at once an object of charity. A considerable number come in the belief that the Government maintains, in conjunction with the free bathhouse, a hospital or home at which they will be cared for in every way. Not infrequently the progress of disease results in a degree of helplessness and destitution pitiable in the extreme. At times practically the last cent has been spent in coming here for conditions in which the baths are of little benefit or even contraindicated.

Here may be seen one of the great clinics of the world. During the fiscal year ended June 30, 1911, there were given in this institution 220,435 baths. There has been heretofore no medical supervision. Practically all applicants who declared themselves unable to pay were admitted with very little, if any, reference to the nature of their disease or whether such treatment was likely to prove beneficial or the reverse. There was no one qualified to determine these questions. Cases of cancer and tuberculosis were bathed, and occasionally smallpox and other infectious diseases crept in until accidentally recognized by the manager, or by one of the attendants. Many came for conditions that could not possibly be materially benefited by the water, thus delaying proper treatment, while incurring the unnecessary expense, suffering, or inconvenience incident to a separation from home and friends, and finally departing with the impression that the baths were of no value or that their cases were incurable. Others have fallen ready victims to quacks, nostrum frauds, and irresponsible venders of secret remedies. Many held tickets issued months previously, occasionally taking a bath simply for cleanliness. Young children not suffering from any disease whatever were allowed access, and were brought in close contact with the most repulsive forms of venereal disease. Patients were admitted without regard to the number already in the bath halls, so that during the most favored hours it was difficult to walk between them without soiling one's clothes by contact with the perspiring bodies of waiting bathers. There was no ventilation, and the foul air and offensive odors were beyond belief.

The inauguration of a system of issuing tickets good only for certain specified hours has eliminated this overcrowding. To still further correct existing conditions and abuses a decision was requested as to whether baths were to be furnished to all indigents, or only to those who were suffering from diseases likely to be benefited or cured by bathing in the water. This question was appropriately dealt with by the department, resulting in the passage by Congress of the act of March 2, 1911, limiting the privileges of the baths to those who are suffering from ailments for which bathing in the water of the hot springs will afford relief or effect a cure, and who make oath that they are without and unable to obtain the means to pay for baths. This legislation has proved to be of the greatest value, in that it enables the officer in charge to exclude those whose condition would be made worse, those who could receive no benefit, those who are not sick but have been in the habit of coming for a weekly cleansing, and healthy children who apply unaccompanied by parent or guardian.

Attention is respectfully invited to the great need for a new building. Congress made an appropriation in 1890 for the erection of the present structure, and from that time to this the records, so far as obtainable, show that nearly 4,000,000 baths have been administered therein. The evidence of wear and tear attest the truth of these figures. The stone steps at the entrance have been half worn through by the feet of invalids who have here sought relief. The house is less than half the size required for modern service, and only accommodates the patients by the use of pools in which large numbers bathe at the same time. Necessary adjuncts, such as examining rooms, a dispensary, an emergency ward, office accommodations, and all forms of equipment for scientific hydrotherapy are entirely lacking. There are a few tubs, but the therapeutic resources do not extend beyond those of the municipal free baths of other cities, except that the water from the springs is used instead of city water. There is no possibility even of regulating the temperature of the bath to individual needs, except for the few who can be bathed in the tubs. Modern hydrotherapy has developed many different ways of using water, with quite as varying effects as may be obtained from drugs, and it should be made possible to introduce and use these improved methods.

The present building can never be made sanitary at a reasonable cost, nor can it be satisfactorily enlarged. There is practically no ventilation; the toilets are insufficient in number; the roof leaks at both ends of the building; the plaster has fallen in several places; and the water service, including the tanks, will soon need extensive repairs. These conditions are not conducive to improvements in the pay bathhouses, and the Government is represented by a markedly inferior service. It is recommended that the building be abandoned at the earliest practicable date and that a new, model house, with complete modern equipments, be provided.

Allotments amounting to $375 have been made for the purchase of medical supplies which have been dispensed to those unable to procure them, but no attempt has been made to furnish treatment except where the need was great. A complete medical service would require a considerably increased personnel.

It is very desirable that the attendants in this house should wear uniform white suits, and that in cleanliness and personal appearance they should serve as examples for the employees of the leased bathhouses. Their pay, however, is less than half that of the latter in many instances, so that this can not be effected unless the department furnishes and launders the suits, as is the custom in some hospitals. It is believed that the example in neatness, cleanliness, and sanitation would be well worth the cost.

*Baths administered at the Government free bathhouse for the fiscal year 1910–11.*

| | |
|---|---:|
| Applications for free baths | 9,374 |
| Applications for free baths refused | 300 |
| Tickets issued on original application | 9,074 |
| Tickets reissued on original application | 5,972 |
| Total baths given white males | 138,840 |
| Total baths given white females | 22,601 |
| Total baths given colored males | 41,819 |
| Total baths given colored females | 17,175 |
| Total baths given during year | 220,435 |
| Average number of persons bathed daily | 618 |
| Soldiers and sailors bathed | 712 |

## SUPERVISION OF ATTENDANTS.

The third and fourth duties assigned this office, the "maintenance of a clinic for the education of bathhouse operators and their attendants" and the "determination of the fitness of all attendants, physically and otherwise, for the employment in bathhouses, both those operated by lessees and the Government bathhouse," may be best considered together.

Heretofore the bath attendants, about 300 in number, although expected to carry out the written directions of physicians, have never received instructions in their duties from a competent source, nor have they been required to qualify in any way. Upon examination a few were found to be absolutely illiterate and unable to read the bath directions, while a considerable number were so nearly illiterate that it was extremely doubtful if they could render intelligent service. The majority, however, have a common-school education and are appreciative of the benefits to be derived from the department's policy of affording them an opportunity to more thoroughly fit themselves for their work. The only available room for class instruction was in the upper story of the Government free bathhouse, where by removing a partition accommodations were made for about 40. The first class was organized October 17, 1910. This work, owing to the limited facilities, has progressed more slowly than is desirable, but by successive classes a short course of instruction has been given to 178 attendants, with the result that 119 have been accepted and granted certificates of qualification, authorizing their employment for the period of one year in any of the bathhouses receiving water from the hot springs.

The rejections, 59 in number, were for varying degrees of illiteracy, alcoholism, lack of attention to duty, and persistence in wearing old, unsightly, and dirty clothes.

This class work marks the first step in the development of a corps of selected and trained attendants. It will require considerable time to produce satisfactory results, but by persistently following out a policy of instruction for those who are willing to learn and the elimination of those who are unfit, the efficiency of the service will ultimately be greatly increased. Growing out of the experience gained in teaching these first classes new regulations for the direction of attendants have been formulated and applied in harmony with the changed conditions.

The purpose of this report is to call attention to conditions which it is desirable to remedy and which are being bettered. The business interests of the city have displayed great activity in advertising, but to make this fully and permanently effective it will be necessary to establish the best possible treatment of patients in that broad sense which includes not only the services of physicians and the administration of the baths but also the development of those environments which aid in the restoration of health and the extinction of those which are deleterious. While progress may be expected under existing policies, the divided jurisdiction will preclude the best conditions so long as it continues. This seems to have been recognized by Congress in the act of 1832 which directed that the reservation should consist of four sections of land, with the hot springs in the center. It was evidently realized at that time that water alone can not make a spa, and the intent was to provide for the development of a surrounding municipality under the same government as the springs. The opinion is expressed that Federal jurisdiction over the city of Hot Springs would do much in furthering the development of this resort.

Very respectfully,

Harry M. Hallock,
*Medical Director.*

The Secretary of the Interior.

# APPENDIX.

## RULES, APRIL 10, 1911, FOR BATH ATTENDANTS IN BATHHOUSES RECEIVING HOT WATER FROM THE SPRINGS ON THE HOT SPRINGS RESERVATION.

1. Bath attendants shall be required to attend such courses of instruction as may be ordered by the medical director and upon completion thereof they will be required to take a written examination, after which successful candidates will be granted certificates as qualified attendants for such time as may be determined by the Secretary of the Interior.

2. Applicants for certificates as qualified attendants shall not be eligible for examination until they have served at least six months as attendants, assistant attendants, or helpers.

3. Two consecutive failures to qualify as an attendant shall debar the applicant from further instruction and the medical director shall order his or her discharge.

4. After all attendants now employed shall have been afforded an opportunity to qualify and to procure certificates, assistant attendants and helpers who, in the opinion of the medical director, display an aptitude for the work will be permitted to take the course of instruction, and upon satisfactory completion thereof, will be granted certificates and classed as attendants.

5. To entitle an applicant to a certificate as a qualified attendant, a total mark of not less than 200 points shall be required, to be awarded as follows: A perfect written examination after the course of instruction shall entitle the candidate to 100 points. The medical director will award not to exceed 100 points as expressing the applicant's efficiency as noted at his inspection and the manager of the bathhouse in which the applicant is employed at the time of his examination shall award not to exceed 100 points for general aptitude.

6. Whenever the number of qualified attendants is in excess of the requirements of the service, those not employed shall be entitled to have their names enrolled on a waiting list in the office of the medical director.

7. Managers are prohibited from employing as an attendant any person not holding a certificate of qualification as such whenever there are five or more qualified attendants registered on the waiting list in the office of the medical director.

8. After all attendants and eligible helpers have been given an opportunity to qualify and to procure certificates as attendants, instruction will be given to such other persons as declare their intentions to qualify as attendants and who, in the opinion of the medical

director, display an aptitude for the service, and upon satisfactory completion of the course they will be granted certificates as assistant attendants.

9. Whenever the number of assistant attendants is in excess of the requirements of the service those not employed shall be entitled to have their names enrolled on a waiting list in the office of the medical director.

10. Managers are prohibited from employing as an assistant or helper any person in connection with the administration of the baths not holding a certificate as an assistant attendant, whenever there are five or more so qualified registered on the waiting list in the office of the medical director.

11. Managers shall assign each assistant attendant to serve under a qualified attendant, who shall instruct such assistant in the performance of his or her duties with a view to future qualification as an attendant.

12. Managers shall have authority to discharge both attendants and assistant attendants, but certificates of qualification as attendants and assistant attendants shall be revoked only by the medical director.

13. The medical director may suspend an attendant or assistant attendant for cause for a period not to exceed six months, and during such suspension said attendant or assistant attendant shall not be employed in any capacity in any bathhouse.

14. An attendant or assistant attendant discharged by direction of the medical director shall have his or her certificate of qualification revoked and shall not again be employed in any capacity in any bathhouse for the period of six months, and thereafter only under the conditions applicable to new candidates with no prior service.

15. Managers are required to report immediately by letter to the medical director the employment, suspension, or discharge of attendants and assistant attendants.

## CERTIFICATE GRANTED TO QUALIFIED ATTENDANTS.

This is to certify that ——— ——— has satisfactorily completed a course of instruction in the school for bathhouse attendants conducted under the supervision of the medical director of the Hot Springs Reservation, and his or her employment as a bathhouse attendant in any of the bathhouses receiving water from the Hot Springs Reservation will be permitted for the period of one year from the date hereof, conditioned upon good behavior and strict observance of the rules and regulations for the government of the bathhouses receiving water from the Hot Springs Reservation. This license, however, may be revoked at any time for cause during the period for which given when in the judgment of the medical director the circumstances of the case warrant such action.

——— ———, *Medical Director.*

## RULES APPROVED BY THE DEPARTMENT FOR THE GOVERNMENT OF THE FEDERAL REGISTRATION BOARD OF THE UNITED STATES RESERVATION, HOT SPRINGS, ARK., WITH AMENDMENTS UP TO NOVEMBER 14, 1911.

1. There shall be a president and secretary, elected by the board, who shall each serve for one year and until his successor is elected and qualified. Such election shall be held at the annual meeting on the last Thursday in June of each year. Should a vacancy occur in either position by death, resignation, or otherwise, such vacancy shall be filled by the board at its first regular meeting next succeeding the date the vacancy occurs, or at a special meeting called for that purpose.

2. Three members of the board shall constitute a quorum, with full authority to transact any and all business that may come before the board.

3. Minutes of all business transacted by the board shall be reduced to writing and be copied in a record provided for the purpose, and at the next regular or special meeting, the minutes of the previous meeting shall be read and approved, with such corrections, if any, as the board may consider proper to make.

4. The regular monthly meetings shall be held on the second and fourth Wednesdays of each month at 8 o'clock p. m., and all routine business not filed with the secretary of the board at least 24 hours before the time fixed for the meeting will not be considered, but will be held for consideration until the next regular meeting, provided, however, the president of the board may waive this provision when, in his judgment, the exigencies of the case demand it. Such other meetings may be held as the board may deem necessary, prior notice thereof to be duly given.

Examination of applicants for registration shall be held quarterly on a date to be fixed by the board. Any registered doctor hereafter dropped from the list of registered physicians will not be restored until after he successfully passes the regular examination prescribed by the board for original registration.

5. The following rules shall govern applicants for registration:

(*a*) To be entitled to registration applicants must be graduates of some reputable medical college recognized by either of the American Medical College Associations, or of some reputable school of osteopathy recognized by the American Osteopath Association, and must have complied with the laws of the State of Arkansas relating to the admission of physicians to the practice of medicine and surgery, or either, within said State.

(*b*) Applicants will be required to furnish in writing such evidence as the board may desire touching their personal history and personal and moral character and standing during the five years next preceding the date of their applications. Applicants will also be required to submit to such examination as the board may see proper to subject them touching their qualifications and knowledge of medicine and surgery and to prescribe the hot waters, provided that the names of medical officers of the Army stationed at the Army and Navy General Hospital in Hot Springs, Ark., shall be placed on the list of registered physicians without examination.

(*c*) An applicant who twice fails in his examinations before the Federal registration board shall not be permitted to again take the examination prescribed by the board until after the lapse of one year from the date of his last failure. No registered physician shall be permitted to associate himself in practice looking to the prescribing of the waters of the hot springs with a nonregistered physician, under penalty of having his name removed from the registered list. The name of any registered physician who shall give bath directions for the patients of a nonregistered physician shall be removed from the registered list.

6. The order for the transaction of business before the board shall be as follows:

(*a*) Reading and approval of minutes of previous meeting.
(*b*) Consideration of new business.
(*c*) Consideration of unfinished business.
(*d*) Presentation of evidence and trial of physicians charged with violation of the rules of the Secretary of the Interior "For the government of all bathhouses."
(*e*) Examination of applicants for registration.
(*f*) Miscellaneous business.

The foregoing rules are subject to amendment at any regular meeting of the board on the giving of 30 days' notice in writing of the proposed amendment, subject, however, to the approval of the Secretary of the Interior.

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